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AN

EPITOME

OF

Juridical or Forensic Medicine;

FOR THE USE OF

MEDICAL MEN, CORONERS,

AND

BARRISTERS.

BY

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TO

SIR SAMUEL ROMILLY, M.P.

&c. &c.

THIS VOLUME

IS RESPECTFULLY DEDICATED,

BY

His very obedient humble Servant,

THE AUTHOR.

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PREFACE.

THE object proposed by publishing these pages is, to put into the hands of medical men a concise Essay on Poisons and their Remedies, with a collection of those tests which are most to be relied upon for ascertaining their presence: also to point out what is necessary to be attended to in cases of sudden or violent death, that they may be prepared to state their evidence before a Coroner, or in a Court of Justice, in a manner reputable to themselves and satisfactory to the public. I am not acquainted with any work in the English language which treats fully on this subject: to one written in Latin by Professor Plenk, of Vienna, I am indebted for many valuable remarks; but that is in the possession only of a few, and is not a work of hasty reference.

I have divided the subject into different heads, and inserted from the best legal authorities what is directed by the law to be done in each case, the degree of criminality, and the punishment awaiting the offence committed. In offering this book for the perusal of Barristers, I presume not to interfere in their professional avocations, but to afford them an opportunity of knowing what ought to be done by medical men, in cases of violent death; the antidotes that should be employed when poison has been taken, the tests necessary for its manifestation, and the degree of confidence that is to be placed in them; the external marks occasioned on the body by the different means which cause death, and the usual internal appearances observed on dissection.

A general acquaintance with this subject will enable them to examine medical witnesses more minutely, and detect ignorance or omission on their part, which may have stood in the way of their patient's recovery, or prevented the cause of his death being made apparent.

"Some acquaintance with this part of medical science must be useful at least, and some-

times necessary, to Judges and Lawyers. They will thus be enabled to estimate how much they may depend on the opinion of any physician, and will know how to direct their questions so as to arrive at the truth, and avoid being misled by his partiality or favourite opinions. To the lawyer, who conducts the defence of an accused person in a criminal case, it is almost indispensable; without it, he cannot do justice to the cause of his client: and the duty of a Coroner in England consists almost entirely in deciding questions of juridical medicine *."

To Professor Duncan I acknowledge my obligation for the advantages I derived from his Lectures on Medical Jurisprudence, and have availed myself of my recollection of them, by introducing several of his valuable remarks in this work. There are many voluminous and elaborate systems on juridical medicine by very eminent authors, as Metzer, Zacchius, Mahon, Foderé, Schraud, &c. It has been noticed by Frank, Haller, Percival, and

* See review of Foderé's work in Edinburgh Medical and Surgical Journal, vol. i.

many others, whose works may be consulted with advantage by those who wish further information on the subject. Many good observations are also scattered in various periodical publications. My object has been, not to write a system, but to extract from the best authorities those remarks which appear to be worthy the attention of my readers, and compress them into a form most convenient for speedy consultation. A great part of these pages has been written some years, but, from consciousness of their deficiency, withheld from the press; the indignation however, which has been excited by the perusal of the medical evidence adduced in some recent trials, has induced me to offer them to the public. I shall be happy, if they shall be found in any degree to prevent "those laws which were established by the integrity and wisdom of our ancestors, being injured by our folly, or perverted to an evil by our remissness."

Juridical medicine has attracted but little interest in this country, although in Germany and France it has occupied the attention, and called forth the labour, of several of their most eminent

medical philosophers. It consists in giving decisions on medical questions in Courts of Justice, and has therefore, in Germany, received a new and appropriate name, that of State Medicine. Distinct notice is taken of juridical medicine in the books of the law of Moses, in which it is commanded that the priests shall be desired to visit houses infected with the plague, or any contagious disease; the inhabitants are to be examined, quarantine established, the walls to be scraped and whitewashed, and the houses shut up, or, in bad cases, pulled down *. The elders are to be consulted in cases of doubtful virginity †, &c. It is noticed also by the Roman law. But the first modern code in which it is mentioned, was made about the year 1545, by Charles the Fifth, Emperor of Germany, called "Constitutio Criminalis Carolina;" in which it is enacted, that medical men shall be consulted when death has been occasioned by violent means, whether criminal or accidental, by wounds, poisons, hanging, or

* Leviticus, chap. xiii. xiv. † Deut. chap. xxii.

the like; and in cases of concealed pregnancy, procured abortion, child-murder, &c.

As early as the year 1650, physicians were consulted in the same cases in Italy *. Their opinions are now required by the legislature of all civilized countries in these cases, and bear authority commensurate to the knowledge and respectability of the individuals by whom they are delivered. Professorships on this subject are established in many universities, and its importance is more generally acknowledged; for, on the professional evidence of medical men, the fortune, honour, reputation, and lives of our fellow-citizens often depend. It is now considered a necessary part of medical education, and every practitioner of any branch of medicine or surgery should make himself acquainted with it, for his testimony may be required both in civil and criminal cases, and in consistorial courts, and will generally direct the jury in convicting or acquitting prisoners, in establishing the inheritance of property, and in

* See Commentary on Beccaria's Essay on Crimes and Punishments.

confirming or annulling matrimonial contracts. When the services of a medical man are required in cases of this kind, he should note down correctly every circumstance that appears to be of the least importance. In cases of supposed murder, his evidence will be first required before the Coroner, who cannot act unless the body can be viewed, as it has formerly happened in several instances, that innocent persons have been convicted for supposed murders, committed on the bodies of those who have afterwards made their appearance *. When a dead body is discovered in the fields, streets, or in the water, it must be removed to the nearest and most convenient house, but should not be taken out of the parish in which it is found. We should first ascertain, whether the body is really dead, and, if any spark of life remains, endeavour to call it into action. The situation in which the body lies, should be accurately observed. The first question which arises is, whether the de-

* Three persons were hanged at Gloucester, in the year 1661, for the supposed murder of a man who was missing, but who afterwards returned. A similar circumstance happened at Warwick assizes, in the reign of James the First.

ceased died a natural or a violent death: if a natural death, what was the cause of it; if a violent death, was the violence committed on the spot where the body was found, or elsewhere, and the body carried there afterwards? Secondly, was it committed by himself or another? Thirdly, by what means was the violence committed? If the Coroner is at a distance, and cannot immediately attend, his consent should be obtained for immediate anatomical examination of the body, before putrefaction takes place; and from the state of it we should endeavour to ascertain how long the deceased has been dead; we should also inquire by whom he was last seen, and whether he has lately complained of, or was known to labour under, any disease. The inspection of the external parts of the body should be first entered upon, to ascertain whether there are any wounds, bruises, fractures, dislocations, or marks of violence of any kind; and if there is no evident cause of death, the internal parts should next be searched into; the integuments of the head should be carefully examined—the state of the cranium and sutures, and the

colour and consistence of the brain observed, and the ventricles opened, to ascertain whether there is any serous or sanguineous effusion: the base of the cranium should be examined minutely, as a fracture sometimes exists there which may be easily overlooked. The mouth and throat should next be inspected; we should observe, whether there is any thing thrust into them, or if there are any appearances of inflammation or suppuration; for the bursting of an imposthume in the throat may have caused suffocation. When the thorax is opened, we should observe whether there is any kind of effusion in its cavity, and whether the lungs are sound, as the bursting of a blood-vessel or vomica is frequently the cause of sudden death. The heart and large arteries should be minutely scrutinized; ossification of its valves or arteries, rupture or enlargement of its substance, or water in the pericardium, may destroy life suddenly. The stomach should be next opened, and its structure examined; and if there is reason to suspect that the deceased has been poisoned, not only its contents, but the matter which he has vomited, if any,

should be collected, and chemically analysed. The other abdominal viscera, and the whole length of the intestinal canal, should be traced, as it is possible that hernia, introsusception, or inflammation, may have been the cause of death; an empoisoned clyster may have been administered, or (as in the case of king Edward the Second) a hot poker or other instrument thrust up the rectum. The body should be inspected in the presence of other surgeons, and the appearances noted down on the spot; and, however suspicious they may be, we should bear in mind the possibility of the same effects being produced by very different causes, and, where there is the least doubt, be careful that our evidence does not tend to attach suspicion to an innocent person. We ought to bear in our minds the maxim, that it is better that many guilty escape, than one innocent man suffer *;

* I am aware that this maxim is objected to by the late celebrated Archdeacon Paley: let, however, the reader refer to a work, entitled, "Considerations on the criminal Proceedings of this Country," and he will there see a dismal catalogue of innocent victims to circumstantial evidence, and allow, I think, that the maxim is not a bad one.

and when the evidence is not satisfactory and conclusive, we should deliver our testimony in favour of the suspected person. A medical man should found his evidence solely on demonstrative proof; for his declaration, whether founded on experiment or not, is assumed by the jury as fact, merely on his authority as a professional man. The taste or smell alone, ought to be cautiously admitted as evidence of the presence of poison; though, where vegetable poisons have been employed, it is sometimes difficult to adduce any other*. The attitude and marks on the body should be accurately noticed. There is recorded † the case of a woman who was found with her throat cut, and a knife sticking in the floor near her: three of her relations were in an adjoining room, through which it was necessary to pass to the apartment of the deceased; the neighbours were alarmed, and the body was viewed: these rela-

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* See medical evidence on the trial of Mr. (commonly called Captain) Donnellan, for the murder of Sir Theodosius Boughton.

† Hargrave's State Trials.

tions declared she must have destroyed herself; but, from a particular circumstance, they were suspected, and found guilty of the murder; for, on the *left* hand, was observed the bloody mark of a *left* hand, which, of course, could not be that of the deceased.

Death is sometimes occasioned by causes which anatomy will not discover to us, as concussion of the brain, violent affections of the nerves through the medium of the mind, aërial poisons, or extreme cold.

Sudden death unoccasioned by the action of poisons or external violence, may arise from a variety of internal causes, affecting the different viscera and the sanguiferous system, as apoplexy, aneurismus, ossification, syncope anginosa, ruptures of viscera, most of which may be discovered by dissection: there is, however, a disease called by Mr. Chevalier* idiopathic asphyxia, where the person, without previous illness, faints and dies; no diseased appearances are observed on dissection, but the heart is found unusually flaccid, and its cavities entirely empty.

* Med. Chirug. Transact. vol. i.

AN

EPITOME,

&c.

ON POISONS.

Poison may be given feloniously, or taken accidentally: in the first case it is an offence of the deepest dye, and a most base and cowardly crime; it is not so frequently committed in this as in some other countries, where poisoning is a trade. Lord Bacon says, "Non est nostri generis nec sanguinis."

By our laws it was formerly considered more heinous than any other murder, and by a statute of Henry VIII. was deemed high treason; and the punishment provided was, that the guilty person should be boiled to death, and put into the water toes downwards. A cook

suffered this punishment for putting poison into food provided for the Bishop of Rochester's family, and the poor of the parish *. This law, however, was repealed in the next reign. The art of poisoning has never been carried so far in this country as in Italy, or has been deservedly forgotten. The Acqua Toffana, or Acquetta and Pulvis successionis, with the composition of which we are in this country fortunately unacquainted, are said to destroy life in any given time, a week, month, or year afterwards, according to the manner and quantity in which it is administered. Many have fallen sacrifices to this insidious treachery, when least expecting it. The Emperor Henry of Luxembourg received poison in the sacrament, and Pope Victor in the chalice. Pope Clement VII. is said to have been poisoned by the fume of a taper †. Dr. Mead says he was possessed of a poison, the vapour of which was so thin, that it was drawn by the current made by a burning candle, and would poison a person who sat that way, but

* Hargrave's State Trials.

† Zacchius, Quæstiones Medico-legales.

nobody else; its composition he has not thought proper to mention. Respecting the subtile action of poisons, many wonderful and incredible stories have been told. A priest is said to have offered to destroy Queen Elizabeth by poisoning her saddle *.

Poison may be administered by the mouth; by the lungs through the medium of the air; by the anus, in form of clyster; and by the skin, by means of ointments.

We derive poison from the animal, vegetable, and mineral kingdoms. Mineral poisons are most commonly employed in Europe: they may act chemically or mechanically; most of them have a chemical action; but there are some, as diamond powder, cut hair, pounded glass, &c. which act mechanically. I shall not enter into a discussion respecting their modus operandi, as it is foreign to the plan of this work: it has long been a subject of dispute, and has been very ably treated by a variety of authors, and lately by Mr. Brodie. The aërial poisons are frequently

* Sir Edward Coke, in the Trial of Sir John Hollis.

the cause of death, but more commonly by accident than design.

Poisons have been arranged in two classes, quick and slow, according to the rapidity with which they produce their peculiar effects, and are divided into two orders; first, stimulant and inflammatory; secondly, narcotic and stupifying: these again have been formed into many subdivisions, which I shall not notice, as they are of no practical importance.

When we are called to a person who is *suspected* to have taken poison, the first question which arises is, has he been poisoned? the second, by what particular poison? We should examine the food he has last taken, if any of it remain; and if no mineral or vegetable poison can be detected in it, we should observe whether it has any peculiar smell or taste, and ascertain its effects, by giving a portion of it to a dog; but this is not to be depended upon, as what is poisonous to one animal is not to another: aloes is said to be poisonous to dogs and foxes, and sweet almonds to cats *. Corrosive sublimate, of

* See Mahon, vol. ii. p. 502.

which a few grains are a strong poison to man, may be given to horses to the quantity of an ounce, without occasioning death *. Dogs can bear with impunity a much larger dose of this substance than man. Many vegetables, which constitute the natural food of some animals, are destructive to others. We should examine whether the matters composing the food are wholesome in themselves. Grain, particularly rye, affected with a disease called by the French *ergot*, produces symptoms very similar to those occasioned by poison; viz. vomiting, purging, swelling of the body, and gangrene of the extremities †. Fresh wheat, affected with mildew, produces also baneful effects; and when the flour is very bad, it is said to excite pustules and boils on the hands of those who work the dough ‡. The seeds of the lolium temulentum, mixed with wheat, are productive of similar

* See a paper in the fifth volume of Edin. Med. and Surg. Journal, by Dr. Reeve, on the Effect of Oxymuriate of Mercury on Horses.

† Hoffman, Mat. Med. vol. ii. chap. 9.

‡ M. Sage, Moyens de remédier aux Poisons, &c.

consequences, and if given to hogs, fowls, or other animals, prove destructive to them.

But we should distinguish from poisons those things which, from a peculiar idiosyncracy of constitution, produce on some persons violent effects, as strawberries, honey, salmon, shell-fish, and a variety of other things, which occasion eruptions, vomiting, purging, and symptoms of actual poison. The food may have consisted of deleterious vegetables, as different kinds of fungus, hemlock, &c. which are often mistaken for mushrooms, hedge-parsley, chervil, or other innocent herbs.

We should inquire whether the patient has been subject to periodical colic, or bilious vomiting or purging.

If a person has been poisoned by vegetable substances, we may often discover them in the stomach, or among the matter vomited. Seeds, half-digested fungi, leaves, &c. are sometimes found. We should be careful not to mistake the green produced by copperas or bile, for vegetable green. Persons eating the same kind of food, in the same quantity, may be differently affected: if the stomach is nearly full when it

is taken, it is much less likely to cause death; for, being mixed with the food, it is thrown up by vomiting. The matter vomited should be collected in a clean earthen vessel, and examined; as, when a dissolved poison, or one easily soluble, has been taken, it is there that we are to expect to find it, and not in the stomach *.

We should inquire into the previous state of the person's health, both bodily and mental; whether he has been taking medicines, and of what kind. In all cases of dubious or criminal poisoning, the body should be opened and examined in the presence of medical witnesses: the stomach should be tied at each orifice, and removed, that its contents may be subjected to chemical analysis: if sufficient cause of death does not appear in this organ, other parts of the body, particularly the brain, heart, and whole length of the intestinal canal, should be examined. Apoplexy, and other diseases of the brain, frequently affect the stomach and occa-

* See a paper on this subject, by Dr. Bostock, in the fifth vol. of Edin. Med. and Surg. Journal.

sion vomiting; and the peculiar sympathy between the uterus and the stomach is well known. Introsusception of an intestine may exist, and have been the cause of death. Children sometimes die from the effects of this disease in a few hours: they are afflicted with colicky pains, violent irritation, vomiting, bloody stools, and convulsions *. Worms found alive in the stomachs of those supposed to have been poisoned, may perhaps be admitted a presumption to the contrary.

Unless all the different viscera are examined, it is doubtful how far surgical evidence is admissible in a court of justice. We should be careful not to give an opinion that a person has been poisoned, without being able to produce irrefragable proof of the fact.

Froth issuing from the mouth, soon after death, is not peculiar to those dying by poison, but is often observed, particularly in cases of sudden death, and always in drowned persons.

The symptoms produced by poison are by no means uniform: convulsions, extreme pain,

* See Hamilton's Hints.

and other effects, which are mentioned as consequences, do not always exist; and, in forming an opinion, these facts should be taken into consideration.

It often happens, that, when called to a person who has taken poison, we are unable to procure those remedies which are usually recommended in such cases: it should be remembered, that the great object is to dilute the poison, and remove it from the stomach as quickly as possible: this is to be effected by drinking plentifully of warm water or gruel, with which oil, soap, or mutton suet is mixed—tickling the throat with a feather, or the finger, so as to produce vomiting, or taking a quantity of mustard, which operates as a speedy emetic: if strong acids have been taken, to the above remedies should be added chalk, magnesia, or common potash, properly diluted.

ANIMAL POISONS.

The animal poisons of this country are few: those of hot climates not coming within the design of this work, I shall not speak of. The venom instilled into a wound, by the teeth of a mad dog, adder, or the stings of hornets, &c. produces its effects by external application.

Hydrophobia is a disease of the most dreadful description; anxiety, uneasiness, languor, spasms, horror, disturbed sleep, difficult respiration, and loss of appetite, are the first symptoms, which gradually increase; violent convulsions and spasm of the whole body follow, hideously affecting the muscles of the face; sobbing, redness and protrusion of the eyes; the tongue is swelled, and sometimes hanging out: bilious vomiting, a viscid saliva flowing from the mouth, perpetual spitting, pain in the stomach, great impatience, a horror of fluids, and impossibility of drinking them, characterize this terrible disease. The unfortunate person often endeavours to spit upon and bite those

about him. It is believed that, were he able to do so, he would not communicate the disease to the person bitten.

The remedies best adapted to prevent the bad effects which may arise from the bite of a mad dog, or the stings of venomous animals, are, washing the parts, and sucking out the poison; afterwards the application of the actual cautery, caustic, or (what is most to be relied upon) extirpating the parts with the knife. The wounded part should be made to bleed freely, and a purulent discharge kept up by means of stimulating ointments.

Hydrophobia is more easily prevented than cured. Mercury, arsenic, internally and externally applied, opium, musk, camphor, acids, wine, vegetable and mineral alkali, oil, various herbs, and many other remedies, whose effects are quite opposite, have been employed, and, though each has been snpposed to be useful in particular cases, no one is to be relied upon. Large and repeated bloodletting, formerly recommended by Tissot, has lately been again brought into practice; and there are several cases recorded in the eighth volume of the Edinburgh

Medical and Surgical Journal, where it has been productive of beneficial effects. The blood should be drawn from a large orifice, and suffered to flow ad deliquium animi. The people of Tunis, when bitten by any venomous animal, after scarifying the wound, rub it with olive-oil, which they believe arrests the progress of the poison*.

The *Lytta vesicatoria* is sometimes administered as a medicine; but, when taken internally, either in substance, infusion, or tincture (except in very small quantity), it occasions the most violent effects, as tenesmus, priapism, furor uterinus, involuntary pollution, bloody urine, strangury, violent pain, inflammation and ulceration of the stomach, bowels, bladder, and urethra; delirium, convulsions, and death. If the fly has been given in powder, it may probably be discovered, mixed with the ejected matter, or, after death, adhering to the coats of the stomach, and may be known by its peculiar green and gold colour; but, if given in form of tincture or infusion, we have no means of discovering it.

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* See Jackson on the Commerce of the Mediterranean.

I know only of one case where the Lytta has been given with a felonious intention, viz. that of Sir Thomas Overbury, who (on the confession of the person who administered it to him) is said to have taken it, mixed with his sauces. It has, however, been occasionally taken to goad the exertions of exhausted nature; and, when in too large quantity, has produced the effects already mentioned.

Remedies.

The remedies to be applied are oil, milk, emollient drinks, as gruel, linseed-tea, drank plentifully, and thrown up by clyster; they may also be injected into the bladder, with probable advantage. The specific antidotal effects of camphor are not now credited.

Dissection.

On opening the body of a person who has died of hydrophobia, the tongue and fauces are sometimes found inflamed and swelled; and inflammatory appearances are observed in the brain, with serous effusion on its surface. The stomach

is also inflamed, and there is an accumulation of blood in the lungs: but in some cases no morbid appearances whatever have been discovered.

VEGETABLE POISONS.

VEGETABLE poisons are divided into two classes, the *acrid* and the *narcotic*. The first occasion pain, inflammation, and erosion; the latter, sleep, stupor, and death; sometimes producing purging, vomiting, and convulsions. Several of them are, however, employed in medicine.

The effects of mineral are less simple than those of the generality of vegetable poisons; and when once an animal is affected by the former, there is much less chance of recovery than when he is affected by the latter*.

The poisonous vegetables found in this country are fortunately but few: those most

* See Experiments and Observations on the Action of Poisons, by Mr. Brodie.

commonly met with are *Hyoscyamus* (henbane), *Cicuta virosa* (water-hemlock), *Atropa belladonna* (deadly nightshade), *Aconitum neomontanum* (wolfsbane), *Datura stramonium* (thorn-apple), *Digitalis purpurea* (foxglove), *Lauro-cerasus* (common laurel), several of the tribe of fungi, and the juice of the poppy or opium. The effect of most of these is an impression on the nervous system, which, if considerable, frequently produces death.

Henbane is a most valuable medicine; but, when given in too large quantity, becomes a very dangerous poison, occasioning stupor, symptoms of intoxication, apoplexy, or furious mania, extreme agitation, convulsions, sometimes vomiting, and remarkable dilatation of the pupils of the eyes, which become insensible to the stimulus of light.

Water-hemlock is one of the most deleterious plants Great Britain produces; it occasions convulsions and sudden death, but does not cause sickness, or any complaint in the stomach or bowels. The smell of it in a close room occasions giddiness and head-ache. The conium, or

common hemlock, is by no means so poisonous as water-hemlock.

Wolfsbane or *monkshood.* The leaves and root of this plant are violently poisonous when fresh, but not so much so when dried. They produce heat in the mouth, throat, and tongue, which gradually affects the whole body, occasioning spasm of the muscles, great debility, and giddiness; sometimes purging and vomiting succeed, followed by delirium and insensibility.

Deadly nightshade. This is a most violent poison, the berries of which, having a beautiful and tempting appearance, are often eaten by children, and occasion the most fatal consequences. The effects produced by this plant are giddiness, difficulty of breathing, pain and tightness of the breast, distressing thirst, and dreadful ravings, fatuity, but not stupor; the jaws are frequently firmly closed, the eyes staring, the pupils dilated and insensible to light; universal agitation and trembling, particularly of the tongue, difficulty of swallowing, and unavailing efforts to vomit. "The body soon putrefies, swells remarkably, and is covered with

livid spots—blood flows from the mouth, nose, and eyes, and the stench is insufferable *."

Thorn-apple. The effects produced by this plant are giddiness, great terror, delirium, debility, stupor, and death.

Foxglove, administered in proper doses, is an excellent medicine: it is frequently taken by the lower class of society as a remedy for dropsical complaints, in form of infusion, without proportioning the dose to the activity of the medicine: when taken to the quantity of a few grains, it produces violent vomiting and purging, giddiness, delirium, hiccup, convulsion, and death. Every part of the above-mentioned plant is poisonous.

Different species of the order of fungi, particularly the agaricus muscarius, or bug-agaric, and the fungus piperatus albus, or pepper-agaric, have a deleterious effect, and produce swelling of the body, delirium, sickness, and great pain, succeeded by vomiting, purging, cramps, and convulsions. When eaten in small quantity they have an inebriating effect. We

* See Edinburgh New Dispensatory, by Dr. Duncan, Jun.

are informed by Haller, that the Russians eat almost every species, even those which other nations esteem the most dangerous *.

The leaves of *Laurel*, distilled with water, become a very quick poison. A tincture or decoction would probably have the same effect.—This poison was not known till the year 1728, when it was accidentally discovered in Ireland, and an account of it published in the Philosophical Transactions †. When two or three times distilled with fresh leaves, a heavy essential oil comes over, which, by shaking, becomes incorporated with the water. Two ounces of this killed a middle-sized dog in less than half a minute, even while it was passing down the throat ‡. The smell of laurel-water is similar to that of bitter almonds, from which, when distilled, a poison is extracted, similar to the laurel in its effects. When laurel-water is given in smaller quantity, it produces sudden and violent convulsions resembling epilepsy, paralysis, and death.

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* Haller, Helvet. Hist.

† Vid. Philosophical Transactions, vol. xxxvii.

‡ See Fontana on Poisons.

From the experiments of Dr. Browne Languish, it appears that, if laurel-water be given to a dog, in gradually increased doses, mixed with his food, he will be enabled to bear as much as four or five ounces, without sustaining injury; but, if one ounce, undiluted, be poured upon an empty stomach, it will occasion violent convulsions and death *. By the same authority, it appears that laurel-leaves, beaten into a pulp, have a deleterious effect upon animals.

The only instance on record of a person being tried on suspicion of having unlawfully administered this poison, is that of Mr. Donnellan, at Warwick, in the year 1781.

The essential oil of bitter almonds is the most speedily fatal of any poison we have: the smallest quantity inserted in a wound causes death. Opium is injurious to some constitutions in very small doses; others, from habit, are enabled to bear considerable quantities, without sustaining inconvenience from it. When administered in a large dose, to a person not accustomed to it, it generally produces vomiting, where-

* Experiments on Brutes.

by its fatal effects are often counteracted; but, if this does not take place, giddiness, nausea, intoxication, delirium, and stupor succeed, terminating in death.

A case is recorded by Dr. Marcet, in the first volume of the Medico-chirurgical Transactions, where six ounces of laudanum were taken by a man, and remained in his stomach five hours before any remedies were applied for its removal: he, however, by perseverance in judicious treatment, eventually recovered.

Opium and laudanum are not unfrequently sold by druggists, by mistake, for other substances of similar appearance.

Remedies.

The remedies for henbane, hemlock, nightshade, wolfsbane, thorn-apple, poisonous mushrooms, and opium, are active emetics, as sulphate of zinc or copper, purgatives, strong infusion of mustard, clysters, alkaline salts, oil or milk drank plentifully, blisters to the stomach, and strong vinegar in large quantities, particularly when thorn-apple or opium have been taken: to counteract the effect of the latter, strong coffee

has been recommended, and the person should be moved about and agitated, to prevent his sleeping. Bleeding has been advised, but should never be resorted to till the pulse becomes full, and there is danger of fever supervening. Blisters applied to the stomach will probably be useful in all cases of vegetable poison. As the effects of very large doses of opium are decidedly sedative, brandy and water, and other stimulants, should be given after the poison has been removed from the stomach. When *Foxglove* has been taken in too large a quantity, brandy and water, to which some spirit of horseradish, or ammonia, or other stimulating cordials are added, should be administered, and blisters applied to the stomach. The antidotes to *Laurel-water* are, alkaline salts, and other stimulants. The spirit of ammonia diluted with water should be forced down the throat to the extent of two or three drachms.

Dissection.

The bodies of those who have been destroyed by vegetable poisons, generally swell

prodigiously, soon become offensive, and covered with livid gangrenous spots.

On opening the body, the viscera are usually found in a sound state, but the veins are full and distended, the blood remarkably fluid, and the arteries empty *; but when the deadly nightshade has been the cause of death, the intestines are inflated and inflamed, or corroded and gangrenous †.

To the above catalogue of poisons may be added the aroma of certain plants and flowers, as the lily, mignionet, saffron, &c. which are said to have produced asphyxia, and even death.

A *strong* infusion of tobacco, given as a clyster, is poisonous, and occasions speedy death.

There are other plants, as the arum, the yellow lily, the squill, meadow-saffron, &c. which, when taken in considerable quantity, cause vomiting and other severe effects. The juice of the veratrum album, applied to a wound, is said to occasion convulsion and

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* See Fontana on Poisons.

† Edin. Dispensary, by Dr. Duncan, junr.

death; and the powder of it, so applied, violently affects the stomach and bowels: taken internally, it proves a strong emetic, occasioning severe convulsions and other bad effects.

There are a vast number of animal and vegetable substances, the product of India and America, which are highly deleterious, to treat of which, would be foreign to the object of this work. Some are of so poisonous a nature, that the smallest quantity will occasion death, as the Ticunas, the Accawaw, and the Caruna *, the hundredth part of a grain of which, infused into a wound, will kill a small animal. A maggot bred in the putrid milk of the Jatropha Manihot, is so potent, that the smallest quantity infused in drink is sufficient to destroy life, and is said to be occasionally employed for that purpose by Africans and Negroes †.

* Bancroft's Guiana, p. 98, 266, 288.

† See Long's Hist. of Jamaica, vol. iii. p. 781.

OF MINERAL POISONS.

The metallic and mineral poisons are lead, copper, arsenic, and orpiment, mercury, antimony, silver, barytes, metallic fumes, and the mineral acids. These substances are not poisonous in their metallic state, but become so when united with acids.

LEAD.

Lead is found in the shops, in the state of red and white oxide and litharge, and its action is greatly increased by union with acids: it is used in medicine both externally and internally. As external remedies in cases of inflammation, sprains, contusions, &c. the preparations of lead are very valuable; but their application is not altogether unattended with danger, particularly when applied in the form of poultice to ulcers and open wounds: there are several cases recorded, in which colic, and slight paralytic affections, have been occasioned by their use *. Dr. Per-

* Med. Essays.

cival says, he has been assured from undoubted authority, that a gentleman had a slight paralytic affection from putting his feet every evening on a piece of lead near the fire, and that his dog lost the use of his limbs by lying upon it.

Preparations of lead have been given internally in small doses, in cases of ulcer of the bladder, vomiting of blood, and other diseases, in which astringent and styptic remedies are required; but they should be administered with great caution, as the most dangerous effects may result from their use. Lead is classed among the slow poisons: it is seldom or never given with the intention of poisoning, but is received into the body mixed with our aliment, or dissolved in wines. Any acid or fermenting substance, kept in vessels lined or glazed with lead, will dissolve a portion of it; and thus we may be taking in a slow but certain poison, and experience all its dreadful effects without suspecting the cause. Delicate people and children are affected by the smell of paint, and there are instances of their having the colic from sleeping in a recently painted room.

Lead is destructive to animal and vegetable life. Plants set in pots of this metal do not thrive, and poultry fed in troughs lined with it, pine and die. It was formerly a common custom to sweeten cider and acid wines, by suspending a ball of lead in the centre of the cask; and to such a pitch had this dangerous art arrived in France, that its practice was made a capital offence. As lead unites very readily with oils, the acetate or sugar of lead has been much used in Holland, to correct the more offensive expressed oils, and make them resemble oil of olives or almonds. The fumes of lead are equally deleterious; plumbers and painters exposed to them, have a pallid countenance, and often experience their baneful effects.

Lead sometimes produces only a slow lingering indisposition, which at length terminates fatally; and it is probable some of the slow poisons used by the ancients, and by the Italians, were composed of some preparation of this metal. Lead is often taken into the body in considerable quantity dissolved in water, which has run through leaden pipes, or stood in cisterns of that metal. A portion of the cylin-

der of the pump * may be dissolved in it, particularly where the water is hard, and contains neutral salts, which are occasionally present in it: lead is soluble even in distilled water, if it contains air †; but sulphuric acid has no action on it. Perry, cider, wines, or rum, made in leaden vessels, dissolve a large quantity of it, and occasion the disease called the colic of Poictou and Devonshire, and the dry belly-ache of the West Indies. Some of our older cookery-books direct lead to be put into wines, to prevent their turning sour; but as its pernicious effects in the present age are better known than formerly, it is to be hoped this is now never practised. Wafers are often coloured with red lead, and if picked up by birds prove poisonous to them. A case occurred lately in London, where, in a family consisting of nine persons, four died from using sugar kept in a cask which had formerly contained white lead, and not been properly cleaned.

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* See Fothergill on the Poison of Lead, and Dr. Lambe.

† Henry's Elements of Chemistry.

Effects.

The effects produced by lead are, colic, tremors, languor, asthma, palsy, convulsion, and death.

Remedies.

The remedies to be applied are, opium, when there is much pain or spasm, the warm bath, laxatives, as castor oil, salts, purgative clysters, &c. and gentle emetics; when the body is open, the hydrosulphuret of potash or ammonia, or the sulphuret of potash, should be given diluted with barley-water or water-gruel; or common flowers of sulphur may be taken in any agreeable form, followed by as large a quantity of a diluted alkali as the stomach can bear. According to the observations of Dr. Heberden, the poison of lead seems to affect the nerves, yet is seldom or never found to impair the understanding, or make the patient delirious; it is certain, that cats become delirious from swallowing it *. On opening the body of

* See Percival's Essays.

a person who has died from taking this metal, no morbid appearances whatever are discovered which can be supposed to arise from its action *.

Tests.

The best tests of lead are sulphuretted hydrogen and alkaline hydrosulphurets: these are very delicate tests, and, added to liquor containing lead, give a blackish precipitate. Sulphuret of ammonia, or potash, produced a similar effect. Dr. Lambe, however, has discovered lead in water by other methods of operating, where these have failed †. Dr. Hahnman's test for discovering lead in wines is a very good one; it consists in putting into a phial sixteen grains of sulphuret of lime, prepared in the dry way, and twenty grains of acidulous tartrite of potash or cream of tartar; the phial is to be filled with distilled water and shaken for ten minutes, the clear liquor decanted and kept in a well-stopped bottle for

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* Transact. of Med. Society of London.

† See his Researches into the Properties of Spring Water.

use: this, when fresh prepared, gives a dark-coloured precipitate if lead is present. If, on the addition of a solution of the sulphate of soda, to suspected wines, a precipitate occurs, we may conclude they contain lead; but the most satisfactory method where the precipitate is in sufficient quantity, is, to collect and submit it to the action of heat, in a crucible, or by means of a blow-pipe, when it will be reduced to its metallic state.

COPPER.

The preparations of this metal, most commonly used, are the subacetite, or verdigris; the rust, or green oxide; the sulphate, or blue vitriol; and the ammoniate of copper. Their effects, though different, are, when improperly taken, not less deleterious than those of lead, yet, when judiciously prescribed, they are valuable, both as external and internal remedies. The metal itself, when swallowed, is poisonous; and several persons have died from swallowing a button or a halfpenny. When received internally in considerable quantities, it produces thirst,

pain in the stomach and sides, restlessness, sometimes a rash on the surface of the body*, frequent and small pulse, violent purging, vomiting and retching, hiccup, delirium, fainting, convulsions, inflammation of the stomach, and death. The nitrated copper is more violent in its action, than any other preparation of this metal. Copper is seldom wilfully administered as a poison, as its taste is so styptic and disagreeable, that, unless mixed with some savoury viand, or its stronger salts given in the form of pills, it could scarcely be swallowed in large quantities: there are many instances of persons having taken it in their food; and that which happened many years ago at Salt Hill is still well remembered. The poisonous fish caught in the West Indies are supposed to derive this quality from copper obtained from the ore of that metal existing in the banks on which they feed. It does not kill so speedily as arsenic or corrosive sublimate. Pickles, and other vegetables, are sometimes prepared in copper vessels, to give them a fine green colour. Cider, wines,

* See Percival's Essays.

vinegar, &c. are often impregnated with this metal by running through brass cocks. The acetate of copper, or verdigris, is the form in which it is most commonly received into the body.

Remedies.

When this poison has been taken, if it does not produce speedy vomiting (which a very small quantity in any state generally will), twenty grains of sulphate of zinc, or white vitriol, should be given immediately in warm water, and as large a quantity of diluents drank, as milk, linseed-tea, &c. as the stomach will contain.

Calcined magnesia in considerable doses, a diluted alkaline salt, as potash or ammonia, mixed with water-gruel, &c. should be administered. Mutton suet, dissolved in gruel, being often more easily procured than oil, and less nauseous and more inviscating, should be taken in large quantities. It may also be thrown up in the form of clyster. In case the best remedies cannot be procured, which often happens, a quantity of soap, pearl-ashes,

chalk, or common wood ashes, strained through linen, may be dissolved in water and taken: the same may be administered in form of clyster. When halfpence or buttons have been swallowed, large doses of castor-oil should be given, and all acids carefully avoided.

Sugar and syrups are now found to be the best antidotes to verdigris.

Appearances on Dissection.

When the body of a person who has been poisoned by copper is submitted to dissection, inflammation will sometimes be observed in the brain; but this is not an universal effect. The stomach and intestines will be found inflamed and corroded, and the same appearance exhibited as is produced by other acrid poisons.

Tests.

If it be a liquor that is suspected to contain copper, the addition of a solution of pure ammonia, in quantity more than sufficient to saturate the acid, will strike a beautiful blue colour. Infusion of nutgalls precipitates it of a green colour, afterwards becoming red. If

the quantity contained in the fluid be very small, it may be concentrated by evaporation. If made dishes are suspected to contain this metal, a part should be mixed with pure water and well agitated, and the water decanted off, and treated in the same manner; but the test most to be relied upon, is a piece of well-polished iron, as the blade of a knife, immersed for a short time in the liquid, which, if copper be present, will receive a cupreous crust.

ARSENIC.

The sale of arsenic is restricted in France, and should be subject to similar prescription in this country. The different forms in which this metal is found in the shops, are those of white oxide, orpiment, and realgar: the two latter are combinations of the metal with sulphur. In whatever form it is taken into the body, it is extremely deleterious. The white oxide is most commonly employed as a poison: it is a brittle substance, easily reducible to a powder. It is not very soluble in water, which, at the ordinary temperature, takes up

only one eightieth; but, according to La Grange, it is soluble in one twenty-fourth of cold water, and one fifteenth of hot.

Arsenic, in solution, is frequently prescribed by physicians for the cure of diseases, with manifest advantages, as in intermittent fevers, periodical head-ache, cancers, leprous diseases, &c. and has often proved serviceable when every other medicine has failed. It has lately been considered a specific against the effects of the bites of venomous snakes in the East Indies *. In the solid state it is seldom administered medicinally, as a very small quantity is productive of dangerous consequences. It is a quick poison to plants, and has generally been considered poisonous to all animals; but, according to Dr. Parr, a horse will take a drachm without injury, and his coat and condition be improved by it †. It occasions a sense of heat in the tongue and throat, nausea, and sickness, followed in about half an hour by violent vomiting and purging of watery viscid matter,

* See Med. Chirug. Transact. vol. ii.

† See Med. Dictionary.

sometimes of blood, generally pain in the stomach and bowels, hiccup, spasms, thirst, cold sweats, extreme coldness of the whole body, particularly the extremities, fainting, and death. Delirium, or loss of reason, is seldom a consequence of it; and the unfortunate person is conscious till a few moments before the termination of his existence. After some time, these symptoms cease, the abdomen becomes tender to the touch, the pulse imperceptible; and with the sensation of faintness, exhaustion, and tendency to sleep, which may continue many hours, he expires: these symptoms took place in a case I attended, where a teaspoonful of alum and arsenic had been taken, in the proportions of one third of the former to two of the latter, which, by the negligence of a druggist's servant, had been sold for magnesia. If the patient recovers, he is often affected with epileptic fits for some time afterwards.

There are on record, cases where nausea and faintness, followed by speedy dissolution, have been the only symptoms; others, where

only vomiting and purging * have been observed: and where there are no proofs or suspicion of arsenic having been taken, it would be very difficult to distinguish the case from cholera morbus.

These are the general symptoms produced by arsenic, but they are by no means uniform; and even although they should all take place, a medical man is not authorized to declare, that death has been occasioned by poison, unless he can actually discover it in the body, or among the matter ejected, which should always be carefully examined. Arsenic applied externally to sores, or bleeding wounds, in form of ointment, will occasion death †. A paste made of arsenic is sometimes used by the French surgeons for the cure of cancers and obstinate sores. One of them mentions an instance of its application proving fatal; the day after it was applied, the

* Case by Dr. Yellowly, in the 5th vol. of Edin. Med. and Surg. Journal; and M. Renault, sur les Contre-poisons.

† See review of Dr. Jaeger's Thesis de Effectibus Arsenici, in the 7th vol. Edin. Med. Journal, and 5th vol. London Journal.

patient complained of colic and severe vomiting, and in two days died in painful convulsions *; the body quickly putrefied; the internal coat of the stomach, and great part of the intestinal canal, were inflamed, and marked with dark spots.

The quantity of arsenic necessary to destroy life, depends upon the form in which it is given, and the state of the health of the person to whom it is administered. A larger quantity may be given chemically dissolved, than in the solid state; but a very few grains are in general sufficient to have a fatal effect. It is probable that some persons are able to bear a much larger quantity than others. That the stomach will sustain greater injury than is generally believed, is proved by the fact of a man having lived several days after swallowing a quantity of melted lead; and, from experiments made on dogs and fowls by Mr. Spry, it appears that, after having melted lead, to the quantity of several ounces, poured down their throats, they survived, and did not appear to be materially injured.

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* Roux, Nouveaux Elemens de Médecine operatoire, tome i. p. 62.

The result of the above experiments, though almost incredible, is confirmed by Dr. Huxham *.

The time that is required to kill by arsenic, also varies. I have seen a case, which terminated fatally in four hours; and another, where the person lived seventy-eight hours after taking it. Arsenic does not act chemically, as a caustic, either on living or dead animal matter.

Remedies.

There is no antidote, properly so called, which can be at all depended upon, to counteract the effects of arsenic. The sulphuret of potash was first recommended about thirty years ago, by M. Navier, physician to the King of France, and has been frequently employed; but is a very doubtful remedy. It has no action on arsenic in the solid form, in which it is generally taken; and, though frequently recommended, is probably inefficacious; it has at least been found so by M. Renault, a French physician, who has made many experiments on this

* See Philosophical Transactions, vol. xlix.

subject. Water, impregnated with sulphurated hydrogen, is a better remedy, and when the arsenic is taken in solution, or in form of arsenious acid, has considerable efficacy *. Alkaline salts are still more efficacious; they act upon the oxide of arsenic much more speedily than acids. An ounce of subcarbonate of potash, or prepared kali, dissolved in three or four quarts of warm water or gruel, should be speedily taken, or the liquor potassæ or ammoniæ, mixed with gruel or linseed-tea, should be taken in the same manner. These, as chemical remedies, are the most likely to afford relief; if they cannot be had, sulphur, wood-ashes, or soap dissolved in water, or lime-water, should be taken in large quantities. Acids have generally been considered are injurious; but they are recommended by M. Sage as useful against mineral poisons, though they have very little action on arsenic, except when assisted by heat.

M. Bertrand, a French physician, recommends charcoal as a powerful antidote to the

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* Vide Nouvelles Expériences sur les Contre-poisons de l'Arsenic, par M. Renault.

poisonous effects of arsenic and oxymuriate of mercury, or corrosive sublimate. He gave six grains of these poisons to several dogs, mixed with charcoal, and no injury was sustained by them; to others he gave the poison alone, and when violent vomiting, and other deleterious effects, had taken place, he arrested their progress by giving charcoal, suspended in some fluid. He himself even swallowed, at one time, four grains of corrosive sublimate, and at another five grains of arsenic, mixed with charcoal, without sustaining any injury *. This, however, is by no means to be depended upon, and its antidotal effects are very doubtful.

The plan of treatment on which we are most to depend, is the administration of those remedies best calculated to remove the poison from the stomach. If vomiting has not taken place, an emetic of sulphate of zinc or copper should be given, and as large a quantity of milk, water, gruel, or other diluents, drank as can be got down. Oil, and mutton suet mixed with gruel or water, have been recommended. Oily sub-

* See Journal de Médecine, Dec. 1813.

stances are, however, objected to by M. Sage; and it is the opinion of Fourcroy and Rault, that arsenic, mixed with oil, butter, or fat, will kill sooner than when given in an aqueous vehicle.

Milk has been supposed, by M. Navier, to have a peculiar efficacy in dissolving arsenic. As the only well-founded hope of saving the patient depends on the evacuation of the poison, proper means must be persisted in, till there is reason to believe that this object has been effected. A sponge, attached to a flexible catheter, and introduced into the stomach, would probably bring up a quantity of the arsenic, which adheres to the superabundant mucus lining the stomach. When it appears that the poison has been removed, mild nutritive fluids should be given, and a blister applied to the region of the stomach; and, if the *pulse and other symptoms will admit of it*, blood may be taken from the arm, and the case treated as idiopathic gastritis *; but where the debility is great, it will re-

* See a case in the Medico-chirurg. Transactions so treated by Dr. Roget, vol. ii.

quire the treatment proper for cholera morbus. The body should be kept open by castor-oil and clysters.

Tests.

There are a variety of means of ascertaining the presence of arsenic, some of which may be depended upon, others are uncertain in their results.

1. Hot and fresh-made lime-water, added to a fluid containing arsenic, will precipitate 1,30th of a grain of the metal, dissolved in 100 grains of water *.

2. Water, saturated with sulphuretted hydrogen, formed by the action of diluted muriatic acid on sulphuretted iron, is a delicate test, and produces an orange-yellow precipitate. The same effect is occasioned by the addition of sulphuret of ammonia, or hydrosulphuret of potash.

3. Arsenic, thrown on a burning coal, gives white fumes, and a garlic odour; but if thrown on hot iron, without being mixed with some

* See the review of Dr. Jaeger's Thesis in the Edin. Medical and Physical Journal, vol. vii.

combustible substance to reduce it to the metallic state, *it will not* give out this odour. This test is not to be depended upon, as phosphorus and zinc emit the same smell *.

4. Arsenic, mixed with half its weight of powdered charcoal, moistened with oil, placed between two polished copper plates, bound together with wire, and submitted to a red heat, leaves a white silvery stain on the copper, which will not be removed by rubbing; but this test sometimes fails; and mercury leaves a similar stain, though *not indelible.*

5. Boil a small portion of suspected powder with a dilute solution of potash, in a few ounces of distilled water, in a clean Florence flask, and filter the solution; to which add a few drops of the solution of sulphate of copper: if arsenic is present, it will be strongly manifested by a yellowish green precipitate, which is the pigment called Sheele's green.

6. To a grain of the suspected powder, add the same quantity of charcoal, and two drops of oil; put them into a glass tube, hermetically sealed at one end, which must be coated with

* Dr. Jaeger's Thesis.

pipe-clay and sand; in that end place the mixture, and close the other loosely with paper; place the coated end in a chafing-dish of burning charcoal: if arsenic be present, it will rise, and line the inner surface of the tube with a brilliant coating; break the tube, and lay a little of the reduced metal on hot charcoal, and the smell of garlic will be perceived; or place it between plates of copper, and a white stain will be produced, as in the above-mentioned experiments. This is the most decisive, though not a very minute test.

7. Another test, lately discovered, and extremely delicate, is applied, by adding to the suspected powder a few ounces of distilled water, and boiling it in a flask; to this, when boiled, add a few grains of subcarbonate of potash or soda, agitating it with a glass rod. Touch the surface of this fluid with a stick of dry nitrate of silver or lunar caustic: if arsenic be present, a beautiful yellow precipitate will instantly appear at the point of contact, and sink to the bottom *.

* For excellent observations on this subject, see a paper in the Edinburgh Medical and Surgical Journal, by Dr.

If, instead of potash or soda, a few drops of a solution of pure ammonia be added, a yellow precipitate is formed, but does not sink so rapidly as when the experiment is made with the other salts. Arsenic, dissolved in milk, is difficult to detect, but, by evaporating it to dryness, and redissolving it in distilled water, its presence may be indicated by the above-mentioned tests.

In all experiments of this kind, distilled water should be employed; and in making trials on suspected substances, it would be advisable to make corresponding trials with arsenic itself, that the comparison may be accurate.

Arsenic does not (as has been recently asserted) blacken a knife, by which it is cut; nor does it, when mixed with dough, prevent its rising*. The colour of bile is not changed by admixture with arsenic in solution.

Bostock; vol. ii. of Dr. Henry's Elements of Chemistry; vol. xxxiii. of Philosophical Magazine, by Mr. Hume; vol. ii. of Med. Chirurg. Transactions, by Dr. Roget.

* See the extraordinary medical evidence in the trial of Eliza Fenning.

Dissection.

On examining the bodies of persons who have been destroyed by arsenic, the appearances will not be found uniform, but vary very much in different cases. The body is sometimes swelled and livid, but more frequently natural; swelling is more commonly the effect of vegetable poisons: blotches have been seen on the surface, but this is the effect of re-action, and probably never the case when death has taken place within a few hours after the poison has been taken; nor is putrefaction hastened or retarded by it, although both accelerated and retarded putrefaction have been enumerated among the proofs of death by arsenic. The vessels of the brain are sometimes found distended with blood. The pharynx and œsophagus are generally in the natural state, but the stomach and intestines are almost always inflamed, abraded, or eroded. The action of the arsenic produces a remarkable secretion of glairy mucus from the mucous membrane of the stomach, to which (if it has been taken in the solid form) small pieces will

be found adhering. The inflammation produced on this organ by arsenic, is greater than by any other poison *; it has an ecchymosed appearance, often of a dark red colour, in spots or streaks, somewhat resembling the sides of a boiled lobster. Erosion of the stomach from this cause is seldom seen; but "there are few stomachs," says Mr. J. Hunter, "which are not at the great end, in some degree, digested after death;" but these instances have occurred almost only in those persons who, while in good health, have died suddenly from accident, apoplexy, hanging, or the like. It is possible a case of this kind might be mistaken for the effect of poison †.

I have been present at the dissection of a woman, who took a quarter of a pound of arsenic in coarse powder, which killed her in four hours; but there was no erosion; nor should erosion alone, if discovered, be deemed a proof of poison having been taken: it may be the ef-

* Mr. Brodie's Experiments on the Action of Poisons.

† See Baillie's Morbid Anatomy.

fect of suppuration. There are several cases on record, where this organ exhibited extensive erosions and ulcerations, when it was certain that they could not be the effect of poison. A case of this kind occurred to me about twelve years ago, and is published, with a drawing, in the thirteenth volume of the London Medical and Physical Journal. The preparation is in the possession of Mr. G. Freer. Dr. Baillie, M. Renault, and others, have recorded similar cases. The latter author mentions a case, where the arsenic was swallowed in large pieces, which produced no other effect than slight syncope on the approach of death. On opening the body, the arsenic was found in the state it was swallowed; but there was neither inflammation nor erosion of the stomach. The stomach is generally found nearly empty; its contents consisting only of mucus and extravasated blood, to which the solid arsenic, as before mentioned, is found adhering; but if the poison has been taken in the fluid state, no evidence of its existence will be found in the stomach: this must be sought for by chemical tests among the matter ejected by vomiting, which should be always carefully

preserved. The blood is usually found fluid in the heart and blood-vessels *. Mortification of the pudenda is said to be an effect peculiar to the action of arsenic †: and Dr. Baillie observes that, in several instances, a mortification of the rectum has been observed as a consequence of this poison ‡.

Mr. Brodie, in his Experiments on Animals, found the inflammation greatest in the stomach and rectum, but has never seen ulceration in either.

MERCURY.

Most of the preparations of mercury are active medicines, and several of them violent poisons, as the *nitrous oxide of mercury*, or red precipitate (Hydrarg. nitrico-oxydum), the *red oxide of mercury* (Hydrarg. oxydirubrum), and the *oxymuriate of mercury*, or *corrosive sublimate* (Hydrarg. oxymurias), the last of which is one of the most violent poisons with which we are acquainted: this substance, taken internally, even in very

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* Brodie's Experiments.

† Prestwich on Poisons.

‡ Morbid Anatomy.

small quantity, produces sickness, severe griping, pain in the stomach and bowels, excessive vomiting and purging of frothy mucus, sometimes of blood, distention of the belly, suppression of urine, heat in the mouth and throat, great thirst, cold sweats, anxiety, universal pains, convulsions, and death. This preparation of mercury acts instantaneously, corroding and destroying the parts to which it is applied *.

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* Monsieur Pouqueville, physician to the French army in Egypt, who was a prisoner at Constantinople in the year 1798, speaks of a man, who had, from habit, enabled his stomach to bear large doses of corrosive sublimate. "This man," says he, "was well known all over Constantinople in the year 1800, by the name of *Suleymen Yeyen*, or *Suleyman the taker of corrosive sublimate*. At the epoch when I was there, he was supposed to be nearly a hundred years old, having lived under the Sultans Achmet III. Abdul Hamet, and Selim III.: he had early in life habituated himself to taking opium; but, notwithstanding that he constantly increased the dose, he ceased to feel from it the desired effect, and then tried sublimate, the effects of which he had heard highly spoken of: for thirty years this old man never ceased to take it daily; and the quantity he could now bear, exceeded a drachm. It is said, at this epoch he came

It is poisonous to all animals, but does not act on all with equal violence: from some experiments made by the late Dr. Reeve, of Norwich, it appears that a horse recovered, after having taken an ounce of it, and was not very violently affected, even by that quantity. It has produced bad effects when applied externally, in form of lotion or plaster; but in the experiments made by Mr. Brodie on animals, he did not find it poisonous when so applied.

The red precipitate, and red oxide of mercury, produce violent purging and vomiting, pains in the stomach and bowels, and other distressing effects.

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into the shop of a Jewish apothecary, and asked for a drachm of sublimate, which he swallowed immediately, having first mixed it in a glass of water. The apothecary, terrified, and fearing that he should be accused of poisoning a Turk, immediately shut up his shop, reproaching himself bitterly with what he had done; but his surprise was very great, when, the next day, the Turk came again, and asked for a like dose of sublimate." See M. Pouqueville's Travels, p. 299. See also Mr. Thornton's Travels; and Notes to Lord Byron's Childe Harold's Pilgrimage.

Remedies.

The antidotes to corrosive sublimate, or either of the other mercurial salts, have usually been considered the same as those mentioned as remedies for the poison of arsenic; but, from the experiment of M. Orfila, a French physician, albumen, or the white of eggs, is the only counter-poison to corrosive sublimate: intimately mixed with it, it decomposes it, forming a triple compound, consisting of albumen, muriatic acid, and calomel, which may be taken in considerable doses with impunity*. *Large quantities*, therefore, of whites of eggs, well mixed with water, should be immediately administered in all cases of poison by this salt. Whether or not, on repeated trials, albumen shall be found to be really an *antidote* to corrosive sublimate, its use will always be proper: in general,

* In the trials which I have made on dogs with this poison so mixed, I have found, that even a few grains, well rubbed down with albumen, cause violent sickness, and exert considerable activity. I have not tied the œsophagus to prevent the animal from vomiting, as I confess I have no taste for such cruel experiments.

more reliance is to be placed on plentiful dilution, by mild and mucilaginous fluids, and the evacuation of the poison by vomiting, than on chemical remedies.

Dissection.

The œsophagus, particularly the lower part, is generally inflamed; the stomach is sometimes eroded, and its villous coat covered with dark-coloured spots, indicating inflammation, which extends to the intestines: it generally contains a small quantity of mucous fluid mixed with blood. The liver is often found inflamed, and in females the uterus is frequently similarly affected.

Tests.

The matter vomited, and the contents of the stomach, should be collected and examined, as is directed for the discovery of arsenic. Corrosive sublimate is white, and may be known by its metallic and peculiarly styptic disagreeable taste; it is soluble in about twenty times its weight of water.

1. Expose a small quantity of it, without any admixture, in a coated glass tube (as directed for the treatment of arsenic), to a strong heat; the sublimate will rise to the top of the tube, lining its surface in the form of a shining white coat: if it is in a dissolved state, the solution may be evaporated, and the residuum treated in the same way.

2. To a solution in distilled water, add a small quantity of a dilute solution of subcarbonate of potash, and a copious precipitate of a red orange colour will be formed. The carbonate of soda produces similar effects.

3. * Sulphuretted water throws down a dark-coloured sediment, which, when dried and strongly heated, is wholly volatilized, without any odour of garlic.

4. A piece of copper, exposed to the fumes of corrosive sublimate, becomes whitened; and if rubbed with the hand, acquires a silvery hue.

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* Henry's Elements of Experimental Chemistry.

5. * Nitrate of tin is a very delicate test: one drop only, produces an immediate and copious dark-brown precipitation.

6. If to a very dilute solution of carbonate of ammonia, a few drops of solution of corrosive sublimate in water be added, the whole acquires a milky colour, and a white substance is precipitated, which in a few hours acquires a slate colour.

7. If to a very dilute solution of pure ammonia a few drops of watery solution of corrosive sublimate be added, an instant and copious precipitation takes place, of a white flocculent matter resembling curds, which falls to the bottom.

8. When corrosive sublimate is in very small quantity, it may be detected by placing in the solution a piece of gold clasped with zinc wire, and submitting it to the action of galvanism; when, after some time, the gold will

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* This test, Dr. Bostock says, is capable of detecting the three millionth part of a grain in solution. See Edin. Journal, fifth vol.

be whitened by the precipitation of the mercury upon it *.

9. Lime-water causes a precipitate of an orange-yellow colour.

10. A solution of corrosive sublimate, even though very weak, instantly tarnishes polished silver immersed in it, and gives it a dull pewter colour, not easily removed.

11. Human bile, added to a solution of this salt, is said to precipitate it of a reddish yellow colour †; but this is very uncertain, as it frequently affords no precipitate or change of colour, which probably depends on the quantity of the bile. Ox bile gives the solution a dark green colour, and pig's a dirty red.

12. Albumen, or the white of eggs, well mixed with water, is a delicate test. A small quantity added to a solution of this salt causes an immediate milky turbidness; and a copious white flocculent precipitate gradually falls to the bottom, which by chemical analysis is

* See Dr. Bostock's paper in the fifth vol. of the Edin. Med. and Phys. Journal.

† Orfila, Traité des Poisons, tom. i. p. 54.

found to consist of submuriate of mercury and animal matter. The experiment should be made with *cold water*, as albumen is coagulated by heat.

The nitrous oxide of mercury, or red precipitate, and the red oxide, are not very soluble in water, and may be known by their bright shining red colour.

ANTIMONY.

Most of the preparations of antimony act very powerfully on the human body, and, when given in large doses, produce violent vomiting and purging.

The *muriate*, commonly called *butter* of *antimony*, is a strong escharotic.

Tartarised antimony, taken in large doses, sometimes occasions death, and appears to act as a direct sedative.

I was sometime since called to a child who had taken a large dose of it, in whom no vomiting had taken place: he lay in a state of insensibility, the extremities were cold, and the pulse languid and almost imperceptible; but by

taking some strong brandy and water, these effects were removed, violent vomiting succeeded, and the child recovered. Tartar emetic inserted into a wound produces the same effects as arsenic *.

In the only case of poisoning by tartar emetic which I have seen, the person was affected with violent convulsions, which returned at intervals for several weeks after recovery from the immediate effects of the poison.

Remedies.

Decoction of oak-bark, of cinchona, or strong tea, and other astringents, are supposed by M. Orfila to counteract the effects of tartar emetic; but the chief dependence is to be placed on mucilaginous and diluent drinks, and speedily removing the poison from the stomach; when that is done, opium and blisters might be serviceable.

Test.

The tincture of galls is the most delicate test of the presence of tartarised antimony,

* See Mr. Brodie's Experiments.

with which it affords a copious curdy precipitate of a dirty yellow colour.

The *nitrate of silver*, though the strongest caustic we possess, is often used with great advantage as a collyrium, in a largely diluted state, and has been given internally in doses of one quarter of a grain in cases of dropsy, epilepsy, and angina pectoris; if taken in larger quantity, it excites vomiting and purging, heat in the mouth, throat, and stomach, which are injured and corroded by it: it speedily decomposes and destroys animal substances, and stains them of an indelible black colour.

I believe there is no case recorded of a person having been killed by it, though solutions of it have been accidentally taken; in which case, *common salt* dissolved in water is the best remedy.

The *carbonate* of barytes is a violent corrosive poison. In Lancashire and Cumberland, where it is found, it is employed to destroy vermin.

The *muriate* of barytes, though frequently used in medicine, is poisonous. If given in

large doses, these earths produce symptoms similar to those occasioned by arsenic, but not so violent.

The *remedies* for these poisons are the same as have been recommended for arsenic; but the sulphates of soda and magnesia are considered their chief antidotes.

Tests.

The carbonate of barytes is tasteless, and nearly insoluble in water; it may be discovered by dissolving a portion of it in muriatic acid, and pouring some of the solution into distilled water, to which, on the addition of a few drops of sulphuric acid, a copious *white* precipitate will fall, which is *insoluble.*

The *muriate,* or any other barytic salt, may be discovered by the same test, which will give a similar precipitate.

The *muriate of tin,* taken internally, excites violent vomiting, great depression, and death, without convulsions.

Its antidote is milk, which it speedily co-

agulates; and by chemical combination with it, the poison is rendered inert.

On *dissection*, the stomach is found to be corrugated and indurated, and has been compared to tanned skin, but its colour is not altered.

There are some other metallic salts, as those of gold, bismuth, &c. which are poisonous; but as it is not probable they will ever be the subject of judicial inquiry, I shall not speak of them here.

Phosphorus dissolved in oil is an active poison; it corrodes the stomach, and causes exquisite torture.

Hair cut very fine, and pounded *glass*, are supposed, by the irritation they occasion, to be capable of exciting inflammation in the stomach and bowels; but, from some late experiments on animals, they have not been found to produce this effect. In such cases, the remedies are, fat, oily and mucilaginous drinks, &c. and gentle laxatives. If inflammation has taken place, bleeding, blistering, and other remedies adapted to the cure of idiopathic inflammation, should be resorted to.

MINERAL ACIDS.

The *mineral acids* are much used in medicine, and not unfrequently taken by mistake in an undiluted state, particularly by children.

They are so strong and caustic, that, unless forcibly poured down the throat, or swallowed in the rapid manner in which we take a nauseous medicine, it is not probable that they could be introduced into the stomach in large quantity, except by a person willing to destroy himself. When mineral acids are taken in large doses, they occasion instant and most violent pains in the mouth, throat, and stomach, accompanied with great agitation and excessive vomiting of a yellow matter; purging soon follows, attended with painful tenesmus, colic, and strangury; the surface of the body is cold, and covered with moisture; the thirst is urgent, the pulse imperceptible, but the faculties are not impaired.

These symptoms, like those succeeding the exhibition of arsenic, are not uniform, instances being recorded, of persons having died with-

out experiencing any violent pain, whose stomachs after death have been found completely eroded.

Death is often a speedy, but never a sudden consequence of these poisons. If the unfortunate person does not soon fall a sacrifice to their violent action, his future life is generally miserable; frequent vomiting, emaciation, excessive costiveness, fetid salivation, exfoliation of the membrane lining the mouth, œsophagus, and stomach, universal pains and premature old age, hurry him to an early grave. These are the effects produced by the nitric acid *; those occasioned by other strong mineral acids are nearly the same. The nitric acid is frequently taken as a poison in France, by those who are driven to commit suicide.

Remedies.

The bad effects which arise from this class of poisons are to be prevented by neutralizing them, through the agency of chemical sub-

* Vide Traité de l'Empoisonment par l'Acide Nitrique, par A. E. Tartra. Paris.

stances; weakening them by plentiful dilution, and defending the parts from their action by sheathing and mucilaginous fluids.

The first is to be effected by pouring into the stomach as quickly as possible (for, on the early and almost instant administration of antacids, the only probability of recovery depends), large quantities of dissolved soap, magnesia, or chalk, mixed with water, and diluted alkalis *.

The patient should be made to drink plentifully of diluent and demulcent liquids, as linseed-tea, gruel, and particularly *milk*. Injections of the same kind should be frequently administered, and all irritating and stimulating substances carefully avoided.

When the acid is neutralized or discharged, a blister on the stomach would probably be productive of benefit.

Dissection.

When a person dies from the effects of mineral acids, a short time after having taken

* Vide M. Fourcroy, Système, vol. i.

them, the external parts of the body are, on examination, found in a natural state; but, if any has fallen on the skin, the epidermis will be destroyed, the membrane lining the mouth and œsophagus is burnt, and hangs loose, and the parts beneath inflamed and blood-shot. The teeth are loose, the stomach is generally swelled and eroded, and its texture so much destroyed, that the finger may be easily pushed through it. It contains a bloody fluid, mixed with froth, and a great deal of air. The sides of the stomach are covered with gangrenous spots, and the pylorus is much contracted. The larger intestines exhibit nearly the same appearances. The viscera are inflamed and sometimes burnt by the acid, which often escapes through the stomach. The bladder is found empty. When the nitric acid has been taken, the skin, and every part that it has touched, is stained of a yellow colour. The teeth are loose and yellow on their crowns; and the air found in the stomach has a smell resembling that of bitter almonds *.

* Tartra.

Tests.

The matter vomited should be collected, filtered, and examined; and if any of the poisonous fluid is left in the phial or vessel from which it has been taken, that should also be subjected to analysis.

Sulphuric acid. If there is reason to suppose that this acid has been taken, filtre a portion of the vomited matter, and add to it a few drops of a solution of barytes; if the smallest portion of the acid be present, a precipitate will fall, which is not soluble in muriatic acid: potash or chalk added to it, will cause a considerable effervescence.

The *muriatic acid* may be detected by adding a small quantity of nitrate of silver, or lunar caustic, when a white flaky precipitate falls, which, on exposure for some time to the light, becomes bluish, and afterwards black*. The nitrate of mercury is also a very delicate test of this acid; and if the smallest quantity be present, a dark-coloured precipitate is deposited.

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* Dr. Henry's Elements of Chemistry.

The *nitric acid* stains all animal substances of a yellow colour; its presence may be ascertained by warming a portion of the suspected fluid, and adding to it some sulphuric acid; if a glass stopper, moistened with a solution of pure ammonia, be held over the vessel, white clouds will appear rising from the stopper.

AERIAL POISONS.

DEATH occasioned by *carbonic acid gas*, is generally accidental, though a child or drunken person might be wilfully exposed to its action; it is destructive to all animals, though vegetables thrive in it: it is generated largely by burning charcoal and fermenting liquors, and is often produced by nature, and exists in wells, pits, and caves: being heavier than atmospherical air, it is found near the bottom of these places *.

* The famous Grotto del Cani, near Naples, is celebrated for the noxious effect which the air lying at its bottom,

Persons sleeping in a room where charcoal is burning, or leaning over vats in which the fermentative process is going on, frequently fall victims to its pernicious effects.

Those who are employed to superintend the burning of lime, often sleep by the side of the kiln; and if the wind happens to change, the carbonic acid gas (which is largely generated by exposing lime to heat) is blown upon, and sometimes destroys them.

This gas produces death, according to Morgagni, Hales, Hoffman, and others, by suffocation, occasioning chilliness, head-ache, sleepiness, giddiness, retching, sickness, insensibility, and complete asphyxia. The eyes are often open and staring, the tongue protruded, and the jaws frequently locked upon it; the fists are clenched, and the body convulsed, and apparently in a state of apoplexy. At other times it acts immediately on the nerves and brain, and in a moment arrests the vital functions. Those exposed to the vapours of the fermenting grape, are as

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has upon dogs and other animals, too low to raise their heads above it.

instantaneously destroyed as by the electric shock *.

If, during the burning of charcoal, moisture be present, *hydrocarbonous gas* is evolved, which is so peculiarly fatal to life, that Sir Humphry Davy was nearly killed by taking three inspirations of it.

Remedies.

The means of obviating the bad effects of this gas, are, to remove the body into the open air, dash cold water upon it, and pour, through a funnel or flexible catheter, vinegar and water into the stomach †. Air should be blown into the lungs, and the action of breathing imitated: stimulating clysters should be administered, a *small quantity* of blood taken from the arm, and pungent salts applied to the nostrils. Friction with the hand, or warm flannels, is of great service; if these fail, the hot bath should be tried, oxygen gas blown into the lungs, and electric or galvanic shocks passed through the

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* Dr. Percival on the Poison of Lead.

† Dr. Percival.

chest. Tobacco, either in form of smoke or infusion, ought on no account to be used. The body should never be left while there is any hope, and hope should not be speedily abandoned. I have seen persons recover after lying in an insensible state several days. During the progress of recovery, the mental powers are greatly impaired, and the body is sometimes slightly paralysed. We are informed by Dr. Guthrie, that in Russia, and other cold climates, where these accidents are common, the body is carried into the open air, and rubbed with snow with the best effects. Fever is apt to supervene on recovery. Pits, wells, deep vaults, &c. should not be entered immediately they are opened; it is a good precaution first to let down a lighted torch or candle; for, where these will not burn, animal life cannot be long sustained.

The carburetted hydrogen gas, or fire-damp, which is formed, in large quantity, at the bottom of coal-pits, though not properly called a poison, is annually the cause of the death of many of the miners, by unexpected explosion. An apparatus has lately been contrived, by Sir Humphry Davy and by Dr. Murray, for pre-

venting these dreadful effects, by gradually consuming the gas *.

Dissection.

The body is sometimes much swelled, and has the appearance of having been strangled †: it is supposed to retain its heat longer than when life has been destroyed by any other means. The ventricles of the brain have in some cases been found to contain a serous fluid, tinged with blood; the lungs collapsed, stuffed with frothy blood, and the abdominal viscera dark-coloured and turgid.

The fumes arising from many of the metals in a state of fusion, or aërial solution, are extremely pernicious: those from lead occasion asthma, pains in the chest and body, paralysis, &c.

The fumes of arsenic cause dryness of the tongue, a sense of suffocation, head-ache, vomiting; and, by long exposure, pulmonary consumption is a frequent consequence. Arsenic,

* See Philosophical Magazine for December 1815.

† Prestwick on Poisons.

dissolved in hydrogen gas, called arseniated hydrogen gas, is highly dangerous. The death of M. Gehlen, the celebrated German chemist, was lately occasioned by respiring this air, which he was preparing for an experiment: he was seized with uninterrupted vomiting, rigors, and excessive prostration of strength; these symptoms continued for nine days, when he died; although every effort was made for his relief.

The fumes arising from mercury are very deleterious; they occasion salivation, tremor, paralysis, and extreme weakness. Quicksilver being much used in the arts of gilding metals, silvering mirrors, &c. workmen often suffer severely from its pernicious effects, of which frequent instances occur in Birmingham: these effects are probably occasioned by the metal in the state of vapour, and not of oxydation; as by an apparatus, affixed to the chimney of the workshop, a considerable portion may be caught in its metallic state, which, as a system of economy, is often practised.

Remedies.

The best means of cure are the frequent repetition of active doses of castor-oil, the use of the warm bath, pure air, and a course of medicines containing sulphur, as the hydrosulphuret of potash or ammonia.

Those who wish for farther information on this subject, I refer to a Philosophical History of Mineral Poisons, by Dr. John Johnstone; and the *Traité des Poisons*, &c. par M. P. Orfila.

WOUNDS AND CONTUSIONS.

Surgeons are frequently required to pronounce whether certain wounds are or are not mortal: and, if a wounded person dies, whether his death has been the consequence of those wounds.

Wounds may be properly divided into four classes: first, mortal; secondly, dangerous; thirdly, accidentally mortal; fourthly, certainly not mortal.

The consequences of wounds depend much on the constitution, age, existing diseases, and habits of life of those on whom they are inflicted; for, a wound which would be fatal to one person, may not be even dangerous to another: they are also more dangerous in some parts of the body than in others. A wound may prove fatal from bad treatment, which might otherwise have been healed, unattended with danger.

It is in some cases difficult to say to what class a wound belongs; for some, which we should suppose to be certainly mortal, often prove otherwise. There have been instances of persons, whose brain has been wounded to a considerable depth, who have recovered: others, shot through the head, have survived. A pauper in Paris, some years ago, used to receive charity in a piece of his skull. Other wounds, which at first sight appear trifling, are occasionally the cause of death. A slight blow may rupture an artery diseased by aneurism, or burst a vomica in the lungs; or a wound in the hand or foot, occasion locked jaw.

I shall not specify the wounds that may or may not be deemed mortal; for, as our laws

look to the intention with which they are inflicted, rather than their effects, a minute classification of them is not of so much consequence as formerly, when, if the wounded person lived a year and a day, it was not deemed murder; but by the act of the legislature, called the Ellenborough Act, wounding, with an intent to kill, is deemed equally criminal, whether death be the result or not. Nor shall I say any thing on the treatment of wounds, for that is the province of surgery; but a barrister should endeavour to discover, whether a wound has been properly treated or not; for, if the patient has died from bad surgery, or want of medical care, a prisoner may escape by a flaw in the indictment. We should examine wounds carefully, and, if possible, ascertain whether they have been inflicted during life, and been the cause of death; or given afterwards, to conceal the manner in which the deceased has been destroyed. In the reign of Charles II. Sir Edmonsbury Godfrey, who was hanged or strangled, was discovered in a ditch, with his own sword run through his body; but as no blood issued from the wound, which was evidently given after death, an in-

quiry was instituted, and the means by which he was killed ascertained; though it is probable that those who suffered for the crime were innocent of it. A wound received during life, will exhibit appearances of inflammation, and cause greater hemorrhage than one received after death.

A blow, in itself not very violent, may cause death, by its impression on very sensible organs, or, by forcing a person down, cause concussion of the brain. We should be cautious how we conclude, from the appearance of bruises or ecchymosis, that a person has died by the hands of another; they may have been produced by the fall of one who has died of apoplexy, or been struck by lightning; and in some constitutions will be very extensive from a slight cause.

It is necessary to discover by what weapon or instrument a wound has been inflicted; and if the person is dead or senseless, whether it has been given by himself or by another: if any weapon is found near the deceased, we should ascertain if that could possibly have been the cause of the injury, or whether it has

been placed there afterwards. A man was found shot, and his own pistol discovered lying near him, from which circumstance (and no person having been seen to enter or leave the house of the deceased) it was concluded he had destroyed himself; but, on examining the ball by which he had been killed, it was found to be too large ever to have entered that pistol; in consequence of which discovery, suspicion fell upon the real murderers.

INFANTICIDE.

NATURE having implanted in the breast of all animals a strong affection for their offspring, and in both sexes of the human species a sympathetic tenderness towards helpless infants, it seems incredible that the crime of child-murder should ever be committed; nor is it often perpetrated without doing violence to the tenderest propensities of our nature, which are stifled by the strong sense of shame, and dread of infamy, which an unfortunate woman feels, who is on

the eve of becoming the mother of an illegitimate child.

It is the opinion of Dr. Hunter that this crime is not committed so often as has been supposed. The laudable wish to preserve her character, frequently induces a woman to conceal her situation, and not being certain how far her pregnancy has advanced, or unacquainted with the symptoms of approaching delivery, she may be seized with pains, which she mistakes for griping in the bowels (which the first pains of labour sometimes greatly resemble), and going to the privy, be there delivered, either of a dead child, or one which, though born alive, may be killed by falling on the ground, or drowned in the profuse discharges of the mother, who, from fear, pain, or insensibility, is unable to assist it. "In such a case," says the humane Dr. Hunter, "is it to be expected, when it would answer no purpose, that a woman should divulge the secret? Will not the best dispositions of mind urge her to preserve her character? She will, therefore, hide every appearance of what has happened as well as she can, though, if the discovery be made, that

conduct will be set down as a proof of her guilt."

It is to be feared, that innocent women have sometimes been victims to vague and inconclusive evidence of their guilt, the ignorance of medical witnesses, or the prejudices of a jury. If linen has been prepared for the reception of the expected infant, it is a fair presumption, that the mother did not intend to destroy it, and this circumstance operates strongly in her favour; but, by an act passed in the year 1803 (commonly called the Ellenborough Act), it is ordained, that "women tried for the murder of bastard children, are to be tried by the same rules of evidence and presumption, as by law are allowed to take place in other trials for murder: if *acquitted*, and it shall appear on evidence that the prisoner was delivered of a child, which by law would, if born alive, be *bastard*, and that she did, by secret burying, or otherwise, endeavour to conceal the birth thereof, thereupon it shall be lawful for such court, before which such prisoner shall have been tried, to adjudge that such person shall be committed to

the common gaol, or house of correction, for any time not exceeding two years."

This, then, is the punishment for *concealing the birth* of a bastard child, and is the only punishment that ought ever to be inflicted, unless there is certain and incontrovertible evidence of murder having been committed; but medical evidence alone can seldom be considered to be of this decisive character.

The above-mentioned act relates only to bastard children; and a woman who conceals the birth, or privately buries a legitimate child, is not liable to the punishment prescribed by that act.

A medical man should be careful to divest his mind of all prejudice, and not be led to suppose, that because a child is found dead, and the bystanders cry out against the mother, it must necessarily have been murdered. When called upon in a case of this kind, he should make the following inquiries:

1st. When, where, and by what means has the child been brought forth? was the mother standing or reclining?

What persons were present, and what are their characters, and interests, relative to the suspected person?

Was the child abandoned to the cold, famished, or suffocated? was linen prepared for its reception? Was the labour difficult? Did the fœtus reach its full time? is it perfect? Are there any bruises, punctures, or marks of violence visible on the body of the child? Was there any unusual flooding? In what state is the mother? Was the cord tied on the part of the child? Was the ligature made before or after its death? Does the blood discovered come from the mother, or the child? Are there any swellings or stoppages in the throat or trachea? Has the child died of convulsions, or any other disease? Was the child born alive? Did it ever breathe? Was it capable of living when born? How long did it live after birth? What were the causes of its death? Did they occur before or after birth, or during delivery? Was the placenta healthy?

Observations on the above Questions.

It is possible a woman may bring forth her child in a standing position, and, no person being present, it may fall on the ground and be killed, which will account for any bruises which are discovered. A violent contraction of the uterus may have expelled the child whilst the mother was abroad and remote from assistance. Women have brought forth on the night-chair, not aware of their situation. These instances, however, are rare in first pregnancies.

It is necessary to inquire the characters of those present, as it is possible that the child may have been strangled, or otherwise destroyed, by a person interested in its death; or marks of violence may have been imprinted on the body after its natural death by an enemy of its mother.

Though infants may be destroyed by exposure to severe cold, it is probable that this does not happen often, and when it does, the case will scarcely be dubious; nor are they so tender as has been commonly supposed. They are seldom, if ever, famished to death within a

few days of their birth, for new-born children require very little nourishment, and it was formerly the custom to keep them some days from the breast: this, however, if suspected, may be ascertained by examining the stomach.

A child may have been drowned in water, or in the discharges of the mother (innocent of its death), or suffocated by thrusting rags or other extraneous substances down its throat. In the first case, the symptoms will be nearly the same as in other cases of drowning*, and will be

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* It is the opinion of the celebrated natural historian Buffon, that it is probable a new-born child might sustain a privation of air, for a considerable time, without losing its existence. "At least, the possibility of this I once seemingly confirmed by an experiment upon some young dogs. I put a pregnant bitch, just as she was about to litter, into a tub filled with warm water, where, after fastening her in such a manner, that the lower parts were covered with water, she brought forth three puppies, which were accordingly received into a liquid as warm as they had left. After washing them in this water, I removed them, without giving them time to breathe, into a smaller tub filled with warm milk. In this they were kept immersed above half an hour, and when taken out they were all found alive. They began to breathe, and to discharge some moisture by the mouth.

spoken of in another place; the latter will be discovered on dissection.

If linen has been prepared for the reception of the child, we may presume that it was not the intention of the mother to destroy it. It is, however, not uncommon, that a woman is delivered before her time, unprepared for its accommodation, or she may be deceived as to her pregnancy, or mistaken in her reckoning, which is a frequent occurrence. If the labour is difficult,

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Having allowed them to respire for half an hour, I again put them into warm milk, and left them a second half-hour; at the expiration of which, two of them were taken out vigorous, and seemingly nowise incommoded, but the third appeared rather in a languishing state. After allowing the other two about an hour to breathe, I put them once more into the warm milk, in which they remained another half-hour; whether they swallowed any of this liquor or not, is uncertain, but on being taken out they appeared nearly as vigorous as ever. This experiment I never carried farther, but I saw enough to convince me that respiration is less necessary to a new-born, than a grown animal, and that it might be possible, with proper precautions, to keep the foramen ovale from being closed, and thus produce excellent divers, or different kinds of amphibious animals, which might live equally in air or in water."

or the presentation unnatural, a child may die during its birth, or immediately after, either from the injury it has received, or from the fatigue and exhaustion it has undergone, during a protracted labour. Dr. Hunter says, "a child will commonly breathe as soon as its mouth is born, or protruded from the mother; and in that case may lose its life before the body is born." It may not have reached its full time; and whether it has or not, is a question not always easy to ascertain, for a child at eight months often closely resembles one at nine; but as a child at eight months generally lives, the question is not of importance, for, if it is much younger, its diminutive size or imperfect formation will be evident: it may, however, though of full growth, be imperfectly formed; the heart, or organs of respiration, may be in an unnatural state, or the urinary passages or anus be imperforated; swellings, or accumulations of mucus, may have closed the trachea, and prevented respiration. Wounds, bruises, and other marks of violence are nearly the same in appearance as in adults; but it should be remembered, that the heads of new-born children are gene-

rally swelled after a hard labour. It is possible that a pin, or other sharp instrument, may have been thrust into the brain, or heart; it is proper, therefore, that any appearance of puncture should be examined and minutely traced. The state of the mother should be inquired into: if there has been any unnatural flooding, by which it is declared that the child was drowned, or by which she was rendered unable to succour it, or render it the necessary assistance, she will be found pale, weak, and œdematous; the quantity of blood lost should be ascertained, and compared with the discharges usual in parturition. Fainting, convulsions, and delirium, sometimes attend labour, and may take place before it is perfected, which will, of course, render the mother unable to prevent the child from falling, bleeding to death, or being suffocated.

It is very important to ascertain, whether or not the *funis* or *cord* was tied: it should be done immediately the child begins to breathe, and if neglected, it is generally believed that it will bleed to death: if no ligature be made on the mother's side, it is of no great importance, as but little hemorrhage will ensue; it has been

contended, that it is not necessary, even on the part of the child. Schultzius, professor in the university of Halle, in Saxony, mentions some cases where the cord was not tied, yet no hemorrhage followed; and it is certain, that many similar cases have occurred, where the vessels have closed by their own contractile power: this question does not, however, appear to have been decided. No ligature is necessary on the *funis* of other animals. If the cord is ruptured instead of being cut, it is not so likely that the child will bleed to death, as the mouths of the vessels will contract.

If, on opening the body of the child, the heart and principal veins contain the usual quantity of blood, we may conclude that its death was not occasioned by hemorrhage, whether the cord was tied or not. An artful woman may let the child die of hemorrhage, and then apply the ligature: this may be ascertained by the emptiness of the veins and heart, and the small quantity of blood found on dissection.

These appearances, however, are no proof that the child has been murdered. We may

fairly presume, that a very young woman is ignorant of the necessity of a ligature, or she may have swooned, and tied the cord as soon as she was able, though too late to save the life of her infant. Violent hemorrhage may have taken place from the uterine vessels of the mother *before* the birth of the fœtus, which may thereby be exhausted of blood; the vessels of the cord itself are sometimes burst, and blood found in the uterus *. The throat and trachea should be examined, as extraneous substances are sometimes thrust into them, or the passages may be stopped by preternatural swellings, adhesions, or collections of mucus. The child may have died of convulsions, epilepsy, or other diseases, the cause of which is not evident. Suddenly bending or turning the neck, sometimes occasions death †. New-born infants are very subject to convulsions, and in children a few months old, they are the frequent consequence of worms, teething, and diseases of the bowels. Introsusception, to which young chil-

* Burns's Principles of Midwifery.

† Mahon.

dren are very liable, may be the cause of death, which will be ascertained by dissection.

Whether or not the child was born alive; whether it was alive at the commencement of labour; or whether it ever breathed; are questions of great importance to determine, but of difficult solution.

It may be proper here to give a concise description of the means by which the fœtus is nourished. The circulation of the blood, and the structure of the heart, in the fœtus, is different from the adult, which difference disappears a short time after birth. Not being able to respire, the blood which is conveyed to it through the umbilical cord acquires its oxygen in the lungs of the mother. The cord consists of two arteries and one vein: the latter conveys pure blood from the placenta for the nourishment of the fœtus, and the superabundant part is returned through the arteries to the vessels of the mother.

The usual length of the cord is about two feet, but this frequently varies; when it is too long, it sometimes surrounds the neck of the fœtus, and strangles it. The cord may be

knotted, and by that means the circulation through its vessels impeded; this, however, is a very rare occurrence; an instance of it is recorded by Smellie.

The presentation of the funis at the commencement of labour, is by no means uncommon; and, being subjected to pressure, the circulation through its cavities is obstructed, and the life of the child destroyed, unless it is speedily assisted.

The fœtus participates in many of the diseases of the mother, and may die unborn, of small-pox, fever, and probably many other complaints. When it dies in the womb before birth, it diminishes in size, loses its sanguineous colour, becomes livid, and putrefaction commences, which is particularly observable about the umbilicus, but does not take place so speedily in the uterus, as out of it.

The premature obliteration of the *foramen ovale* has been supposed to be a frequent cause of the death of the fœtus in utero.

There are many presumptive, but no certain signs that a new-born child has breathed. The principal criterion by which this important

question has been attempted to be decided, is the floating or sinking of the lungs in water; this, however, is by no means decisive. If the lungs have ever been filled with air, they are never again entirely free from it, and will swim when thrown into water: it is presumed that, if the child has not breathed, they will sink; but this evidence is not to be depended upon, as putrefaction may have commenced, which, by generating air, will cause them to swim; or a tender mother may have blown into the mouth of her child, with the view of rousing the latent spark of life, and thus have inflated the lungs. Instances have been related, on apparently good authority, of children crying in the womb, which, of course, supposes inspiration to have taken place; and Bohn says he has witnessed an instance of it: but the fact requires better testimony.

The scirrhus, or ulcerated lungs of consumptive persons, and those that have been violently inflated after death *, often sink in water; but healthy lungs, that have been *completely* inflated,

* Stoll, Ratio Medendi.

always float. Heister says he has seen them sink when the child has breathed twenty hours; they may, therefore, be only partially inflated. Haller has observed, that when children had breathed only a short time, their lungs sank in water: one lung sometimes swims, whilst the other sinks. Portal accounts for this, by supposing that air enters the left lung with greater difficulty than the right, owing to the passage to the left lung being somewhat more circuitous than the right: this theory is probable, and seems to have been justified by experiment. It has been supposed impossible to inflate the lungs artificially, till natural respiration has taken place: but, though it requires some force, there is no doubt it may be accomplished, if the nostrils are first closed.

The lungs of a fœtus that has never respired may be buoyed in water by the air generated by incipient putrefaction. By some experiments made by Haller and Fabricius, it was proved that lungs, which sank in water, were gradually raised to the surface as putrefaction advanced: but this is not always the case; as Morgagni,

Camper, Zuchmeyer, and others, have found that putrefying lungs sometimes sink. The results, therefore, are not to be considered uniform. Whole bodies, which sink when drowned, gradually rise to the surface as putrefaction begins; but when they arrive at a certain state (probably when the solids are sufficiently decayed to let out the air contained in the cavities), they sink again. When we propose to try if the lungs float in water, we should, as far as possible, ascertain whether or not they are in any degree putrid; they should be first immersed in the water whole, and afterwards cut into pieces, and thrown in; we may, perhaps, find that some portions will swim whilst others sink. Putrefaction does not begin so soon in the lungs as in any other part of the body, owing to the firmness of the membranous cells, which constitute the greater part of their substance.

"If the air which is in them be that of respiration, the air-bubbles will hardly be visible to the naked eye; but if the air-bubbles be large, or if they run in lines along the fissures, between the component *lobuli* of the lungs, the

air is certainly emphysematous, and not air which had been taken in by breathing *."

When respiration has taken place, the abdominal viscera are depressed, and the lungs are enlarged; they are also of a brighter pink colour than before they have been in contact with air: but on this criterion we cannot rely.

M. Ploucquet has proposed a method of determining whether or not a child was born alive, by ascertaining the comparative gravity of the lungs: he has found, that when a child has reached its full time, but has not breathed, the weight of the lungs, in proportion to that of the body, is as 1 to 67 or 70; but that, after respiration, the lungs double their weight.

This method of proof must be very fallacious, as the capacity of the thorax, and its proportion to other parts of the body, vary greatly, as every person, who is in the habit of seeing infants, must know.

We should be careful not to mistake natural and common appearances for marks of violence. The sutures and fontanelle have been mistaken

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* Dr. Hunter.

for fractures of the skull; an instance of which occurred a few years ago, and the accused person would probably have fallen a victim to the ignorance and hasty conclusions of the medical evidence, had she not fortunately been supported by the testimony of a more experienced surgeon.

It is shocking to think how many innocent persons may have been sacrificed by such precipitate and erroneous judgment.

The skull of a young infant is not very easily fractured, as the bones of which it is composed, not being firmly united, yield to pressure. Where fracture is suspected, it should be ascertained by means of the scalpel, and no conclusions drawn on surmise only.

PREGNANCY.

PREGNANCY is sometimes the subject of juridical inquiry: it may either be *pretended* or concealed.

Pregnancy has been pretended from a variety of motives: first, to gratify the wishes of a husband; secondly, with a view of disappointing the legal succession, or keeping possession of property for some months, till its existence is disproved; thirdly, to extort money; fourthly, to delay the execution of punishment. The existence of pregnancy may be ascertained by particular indications, as morning or evening sickness, cessation of the menses, enlargement of the womb and breasts, and, after the fifth month, by the motion of the child, which is frequently strong, and may easily be felt externally by the hand, but this motion is not always perceived; it may also be discovered by the touch: when pregnancy exists, the os uteri will be easily felt, and will be found closed, and to have assumed an annular figure. The enlargement of the abdomen, or even of the womb,

are not to be depended upon as certain signs: the first may be occasioned by dropsy, tympanitis, scirrhus of the mesentery, or morbid enlargement of the abdominal viscera. The increased size of the womb may be occasioned by hydatids, or a collection of water in its cavity, or disease of its substance. Dropsy of the ovaria often greatly resembles pregnancy.

Anascarca, or dropsy of the belly, may be distinguished from pregnancy by fluctuation, but not always, as the water may be encysted. When utero-gestation really exists, it may generally be ascertained; but every practitioner knows that, under some circumstances, and particularly where there is much disease, it is impossible to form an accurate opinion: hence, pregnant women have been tapped for the dropsy, and diseased women, not pregnant, have prepared clothes for their expected infant. Milk in the breasts of a woman, who has not lately suckled a child, is, with other concomitant symptoms, a pretty certain indication, though Hebenstreit says he has known a woman, who could bring milk into her breasts by suction, or light and continued rubbing.

Cessation of the menses is not a proof of pregnancy, nor is their flow a certain evidence that a woman has not conceived; for there are many examples of the continuance of this evacuation for some months after conception.

Pregnancy is often concealed by unmarried women to avoid disgrace, and by those whose husbands have been long absent.

ABORTION AND CONCEALED BIRTH.

I SHALL treat of *abortion* and *concealed* birth under the same head, as the appearances in both cases are, in many particulars, alike.

Abortion is more common in women than in other animals, in consequence, it has been supposed, of the erect position of their bodies. It may be accidental, and the spontaneous effect of nature, or produced by medicines, or the application of violent means to the body. This crime was practised by the Romans, and is hinted at by Juvenal, Sat. vi. verse 595.; and by Ovid, who says—

> " At teneræ faciunt sed non impune puellæ,
> Sæpe suos utero quæ necat ipsa perit ;"

and is declaimed against by Tertullian. The Hebrew law punished the perpetration of this offence with heavy exactions, and with death, if the mother lost her life in consequence of it. The Roman Emperor, at a congress held at Constantinople in 692, ordained, that it

should be punished with the same rigour as homicide; and severe statutes were enacted against it by the Emperor Antonine, as early as the 161st year of the Christian era. The ancient Greek legislators also prohibited the practice. By the laws of most countries this crime is punished with more severity, if committed after the quickening of the child, than before. The Roman penal code made the same distinction. "Life, in the contemplation of the English law, begins as soon as a child is able to stir in its mother's womb; for, if a woman be quick with child, and any one, by a potion or otherwise, killeth it in her womb, or beat her, whereby the child dieth in her body, and she is delivered of a dead child, this, though not murder, was, by the ancient law, homicide; but the modern law does not look upon this offence in quite so atrocious a light, but merely a heinous misdemeanor; but if the child be born alive, and afterwards die in consequence of the potion or beating, it will be murder*:" but since this law was made, another has been framed, which

* See Blackstone's Commentaries, vol. i. p. 129.

ordains that, "if any person, after the year 1803, shall wilfully and maliciously administer to, or cause to be administered to, or take any medicine, drug, or other substance or thing whatsoever, or use, or cause to be used or employed, any instrument, &c. with intent to procure the miscarriage of any woman, *not being*, or not being proved to be *quick* with child at the time of committing such thing, or using such means, then, and in every such case, the persons so offending, their counsellers, aiders, and abettors shall be, and are declared guilty of felony, and shall be liable to be fined, imprisoned, set in and upon the pillory, publicly or privately whipped, or transported beyond the seas for any term not exceeding fourteen years." The same act ordains that administering medicines, drugs, &c. or using means with the *intent* to procure abortion, *after quickening*, shall be punishable with death *.

Quickening takes place about the eighteenth week, near which time the mother feels the motion of the child, but never before: it is

* See Statutes at Large, 43 Geo. III. cap. 28.

probable that the fœtus is animated at the moment of conception, and the crime committed then, is morally as great as at any other period of pregnancy. The law of Scotland considers the fœtus in utero not quick, as merely "pars viscerum matris:" this, however, is a manifest absurdity.

Abortion, or, more properly speaking, premature labour, is sometimes, in cases of malformation of the pelvis, produced by skilful midwives, whereby the life of the mother is saved, and sometimes that of the child. There have been, and still are, different opinions as to the propriety of performing this operation; but it is surely both legally and morally right, rather to save a certain and valuable life, than risk it for an uncertain one: its propriety is sanctioned by humanity, policy, and justice. A fœtus, born before the seventh month, seldom lives; but Brouzet, quoted by Mahon, says, a child born at the fifth month, and very small, with its eyes shut, could scarcely breathe; warmth and slight motion only indicated that it lived: it had no evacuations, nor did it cry; for four months it continued in nearly the same state, and then be-

gan to move more strongly, to cry, and have evacuations, take the nipple, and be like other children; and, when sixteen years old, was stouter than others of its age *.

Spontaneous, or accidental abortion, may be caused by grief, fright, exercise, or peculiarity of constitution. The strongest and the weakest women are most subject to abortion; the first, because they are the most plethoric; the latter, because they are the most irritable, and subject to fluor albus: it is sometimes occasioned, unintentionally, by bleeding largely, which frequently makes a woman miscarry. A diseased state of the uterus or placenta, or of the child itself, may have the same effect; the fœtus may have the small-pox, dropsy, and probably many other diseases, in the uterus. Women sometimes miscarry from sympathy: if a pregnant woman sees another in labour, her pains sometimes come on, and she is prematurely delivered †.

Abortion may be procured by violent means,

* There is another case, recorded by Dr. Rodman in the eleventh volume of the Edinburgh Medical Journal.

† Dr. Clarke's Lectures.

as blows on the abdomen, stimulating the uterus into action, or causing inflammation or profuse hemorrhage, or by the introduction of sharp instruments into the uterus itself, by means of which, the membranes are ruptured; and if the operator is unskilful, the head of the child is so much wounded as to occasion its death: the mother, also, generally falls a sacrifice, as this crime is usually committed by ignorant people, who, directing the instrument improperly, wound the uterus.

Certain medicines taken into the stomach, will also frequently cause abortion: these are drastic purges, strong emetics, and that class of medicines called *emmenagogues*.

Electricity will also have the same effect. There is, however, no drug which will produce miscarriage in women not predisposed to it, without acting violently on their system, and probably endangering their lives. Some will bear the full action of these drugs, and bring forth their burden in due time, whilst others have so strong a tendency to abortion, that it is impossible to prevent it, even with the utmost care. When abortion takes place in the early

months of pregnancy, it is with difficulty discovered after death by dissection; for the traces it leaves are small: neither the uterus nor the abdomen are much distended, and the hemorrhage proceeding from small vessels is seldom very profuse; but, if it takes place in the middle, or towards the latter end of pregnancy, it may be known by the following signs: if the woman survives, the breasts will generally be found to contain milk, are distended or flaccid; the areolæ of the nipples are larger and darker coloured than usual, and the hemorrhage (coming from large vessels) will be considerable; a fetid discharge, mixed with clots or mucus, is observed to issue from the vagina, which is sufficiently dilated to admit the hand; the os uteri is open, and inclining downwards, and the skin of the abdomen pendulous, wrinkled, and flaccid; the labia soft, red, and inflated, and a few hours after delivery pains are felt about the uterus.

The linen should be examined, as there is, after abortion or delivery, an hemorrhage, which is generally more in quantity, and continues longer than the menstrual flux, and leaves the

body in a languid, relaxed state, which is not a consequence of the menses. In some strong women these effects are so slight, that their strength does not appear to be diminished, and the parts recover their tone in a very short time. These appearances, however, are not always to be relied upon as evidence; they may arise from external violence; and the flaccid state of the skin of the abdomen may be the consequence of dropsy.

Dissection.

If a woman dies in consequence of delivery or miscarriage, in addition to the appearances just mentioned, the uterus will be found thicker and more capacious than is usual when it has not been impregnated; the traces of the adhesion of the placenta to its unequal internal surface, may be distinguished; its neck will be relaxed, and the vagina considerably dilated: these circumstances are more or less apparent, according to the advanced state of the pregnancy, and are the same, whether the abortion has happened spontaneously or has been procured by violent means. It may be supposed that

the distention of the uterus might arise from hydatids *, or moles, and the inequality of its internal surface, occasioned by their attachment; the relaxation may also have been the consequence of flooding. The appendages of the uterus should be examined, and particularly the ovaria. The ligamenta rotunda are relaxed, and the ligamenta lata are nearly effaced during gestation, as they furnish the uterus with part of its external covering †. But the most certain proof has been supposed to be derived from the examination of the ovaria, where, during gestation, and a short time after delivery, a granulous substance will be found, called *corpus luteum*, which vanishes soon after parturition, but leaves a scar for life. Dr. Hooper, however, says that these marks sometimes exist in virgins; and Dr. Denman thinks they are found in salacious women, who have never been impregnated.

Moles, or disorganized masses of flesh, have been discharged from the uterus, without either

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* See a remarkable trial at Lancaster, in Sept. 1808, for the supposed murder of Miss Burns, and the pamphlets which it gave rise to.

† Fyfe's Anatomy.

embryo or umbilical cord *, during the growth of which, all the symptoms of pregnancy have been experienced. This is, probably, always the effect of impregnation; and were it to occur to an unmarried female, who is suspected of having delivered herself privately, and destroyed her child, her character would be materially affected, but probably her life not endangered; as, by the English law, it is necessary that the body of the child be found before the coroner can hold an inquest. In a case of this kind the placental mark would be discovered after death, which, though no evidence that an organized fœtus has been expelled, may be considered a proof of conception.

It is of consequence to ascertain whether abortion or premature labour has taken place accidentally, or been produced by violent means: if it has been occasioned by blows, or the introduction of sharp instruments into the uterus, unless skilfully performed, the bodies of the woman and child will be found punctured and

* See Mr. Lemon's case in the eleventh volume of the Edinburgh Medical Journal.

lacerated: if by taking improper drugs, employing large bleedings, or other means, which are known to procure abortion, we must depend on circumstantial evidence: this, however, is the province of a jury; but, as laxative medicines and small bleedings are often used with great advantage during pregnancy (though they sometimes occasion abortion), we should be careful how we conclude that it has been caused intentionally.

Miscarriages sometimes arise from a diseased state of the placenta and umbilical cord. Grief and other depressing passions, under which a woman, who is conscious that she is about to give birth to a bastard child, may be presumed to labour, may also be the cause of abortion.

PRETENDED DELIVERY

Has sometimes been practised, to impose unlawful heirs on families, to displace the lawful ones, or to gratify the desires of a husband who wishes for children; it is to be discovered by the means mentioned under the head of Abortion, and by the evidence of those who pretend to have been present at the birth. An extraordinary circumstance of this kind happened to a surgeon of this town not long since. Being called to a pretended labour, a dead child was presented to him, but there was no placenta: he proceeded immediately to examine the woman, and found the os tincæ in its natural state, nearly closed, and the vagina so much contracted, as not to admit the hand. Astonished at this appearance, he went to consult a medical friend; but before any farther steps were taken, it was discovered that he had been imposed upon. The woman, in fact, had never been pregnant, and the dead child was the borrowed offspring of another: she was induced to practise the artifice, to appease the wrath of her husband, who frequently reproached her for her sterility.

RETARDED DELIVERY.

Aristotle and Pliny suppose a woman may go longer than nine months, but that other animals more regularly observe the natural period. Haller is of the same opinion, and refers to cases where women have gone thirteen or fourteen months. Hippocrates says, pregnancy cannot go beyond the tenth month. Modern physicians entertain different opinions on this subject. It is probable, that a woman never carries her child in the womb many days longer than nine months, but it is well known that extra-uterine gestation may continue for years. It is the opinion of some eminent physicians, that in consequence of pulmonary consumption, or a waste of the body, by which the nutriment of the fœtus is diminished, the birth of a child may be delayed, and that the same effect may be occasioned by grief: but these causes more commonly produce premature labour.

A want of activity in the male semen, when the father is very old or weakened by disease, has been supposed to have the same effect.

The old government of France allowed ten months. A decision was given in favour of a widow in that country, who pretended she had been with child one year and three days; but her veracity was by most sensible people greatly doubted. In another case (which, for the honour of that country, happened long since), a child was deemed legitimate, though born of a woman who had been four years separated from her husband, and its generation was attributed to a dream, or the force of the imagination *.

By the laws of most countries children are deemed legitimate, though born at a longer period than nine months after the death or departure of the husband: the law of England does not prescribe any particular time; there is, however, on record, a case, in which a child born forty weeks and nine days after the death of its father, was adjudged to be legitimate; the mother had been turned out of doors, and abused by her father-in-law, and the physicians declared that by ill usage, grief, and want of

* See Mahon de la Médecine Legale.

nutriment, the birth might be postponed *: this decision was given, although the woman was of acknowledged bad character. By the law of Scotland, "a child born after the tenth month, is accounted a bastard †."

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* Burn's Justice, article Bastards; also Hargrave's State Trials.

† Erskine's Institutes of the Law of Scotland.

RAPE.

Rape is considered by the laws of all countries, a crime of a most heinous description, and has in all times been severely punished. The punishment has varied in different ages. In this country, the criminal was formerly adjudged "amittere oculos quibus virginem concupivit; amittere etiam testiculos qui calorem stupri induxerunt." In the early part of the reign of Edward the Third, it was deemed a trespass only, and punished by fine and imprisonment: it was afterwards made felony, and, in the reign of Elizabeth, excluded from benefit of clergy. Aiders and abettors are deemed principals, and amenable as such. By the Roman laws it was regarded as a capital offence, and the effects of the criminal were confiscated. The Mosaic laws punished this crime with death.

The evidence in cases of rape generally rests with the female alone, who is allowed by the laws to be a competent witness, if she be of good fame, discover the offence soon after

commission, and made outcry if it was possible that she could be heard, unless restrained by menaces. By the Scotch law, the complaint must be made in twenty-four hours; in England there is no limited time. It is an accusation difficult to be defended, even though the accused be innocent.

Rape may be attempted, perfected without the consent of the female; perfected with her consent; imputed or pretended.

An assault with intent to commit a rape, without having accomplished it, is a heinous misdemeanor, but punishable only as an assault and battery; but if a woman kills him that assaults to ravish her, it is no felony *.

To constitute perfect rape, some degree of penetration, and also of emission, must be proved. If the injured person was a virgin, some injury is usually done to the pudenda, which can only be discovered soon after the commission of the crime. This injury consists in rupture of the hymen, swelling, inflammation, or laceration of the parts, and some

* Hale's Pleas, 37.

discharge of blood: laceration of the perineum is said sometimes to have been occasioned in very young persons.

It is generally agreed, that these effects indicate defloration; but they do not prove rape, as they may occur when the connexion has been with the consent of the female, or they may have been caused by disease. Dr. Percival mentions a case, where inflammation of the pudenda, and symptoms of defloration, occurred in a child four years old, which caused her death; it was suspected that she was injured by a boy of fourteen, who was accordingly taken into custody: but several other similar cases being received into the hospital soon after, the medical men were induced to change their opinions.

These signs, therefore, must be considered uncertain. The absence of the hymen is no proof of defloration, as this membrane may have been destroyed by disease or acrimonious discharges. Graaf, Pineus, Buffon, and others, even doubt the existence of such membrane, and declare, that, by dissection of girls of all ages, they have never been able to discover it.

It has been asserted by good authority, that it is not always ruptured in coitu. Ruysch says he was called to a woman who could not be delivered of her child, and on examination found that the hymen was entire, and so strong, that it prevented the descent of the child's head; he divided it with his scissars, and the birth took place. After a hard labour, attended with much inflammation of the parts, a membrane resembling the hymen has been formed by cohesion. The effusion of blood, though required by the Mosaic law as an evidence of virginity, and often believed to be such, certainly is not. Buffon says, " I can with confidence maintain, that when a girl has conversed with a man before puberty, there is no effusion of blood, provided the disproportion of the parts has not been too great, or the efforts have not been too violent. At full puberty, on the contrary, that effusion often happens even from trifling causes, especially if she is of a full habit, and regular. This sign of virginity is rarely observed in such as are meager, or subject to the fluor albus; and what evidently proves it to be fallacious, is the frequency of its

repetition. In some women, four and even five times has this pretended virginity been renewed in the space of two or three years: this renovation, however, only happens from the fourteenth to the eighteenth year *.

Rape cannot be perfected without the exertion of much violence, unless the woman be subdued by menaces or intoxicated with drugs or spirituous liquors; it is, therefore, proper to examine the state of other parts of the body, and particularly the clothes, where, if the crime has been recently committed, any marks of force that may have been used, will probably be discovered.

If the ravishment be committed on a child under ten years of age, even *with* her consent, it is deemed a rape, and in the eye of the law is equally felonious, as she is supposed to be of insufficient judgment. Sir Matthew Hale is

* Buffon's Natural History, chap. 2d.—I need scarcely say, that the marks of newly lost virginity, mentioned by some authors, viz. swelling of the neck, rings round the eyes, the colour of the skin and urine, &c. are absurd, and still more so, the silly story credited by Mahon, of a monk at Prague, who could tell a maid by the smell.

even of opinion, that such profligacy committed on an infant under twelve years, the age of discretion by common law, either with or without consent, amounts to rape and felony; but the decisions of the court have generally been founded on the statute of Queen Elizabeth above mentioned. A male infant under the age of fourteen years, is presumed by law incapable of committing a rape, and cannot be found guilty of it; but there is no doubt it may be committed by boys under this age, without any unnatural precocity.

In cases of *pretended* rape, the proof generally rests more on circumstantial than medical evidence, as the person bringing the charge must be of a bad, abandoned character; it is, however, felony to force a harlot: there are instances of accusations of this kind being brought by women, who, to give the appearance of violence having been committed, have used acrid and stimulating substances to produce inflammation: this, however, can seldom deceive a medical man, as the enlarged state of the vagina will sufficiently develope the character of the complainant. Sir Matthew Hale men-

tions two remarkable instances which occurred within his own observation, of malicious prosecution for this crime.

HANGING AND STRANGULATION.

The questions which present themselves when a body is found suspended, are, 1st, Whether the person was hanged whilst alive, or after death: 2dly, Whether he hanged himself, or was forcibly suspended by another. These questions may sometimes be difficult to determine.

When a person is hanged up alive, the mark of the cord will be evident round the neck, forming a livid depressed circle. The face, chest, shoulders, arms, and hands, are swelled and livid, and a bloody mucus issues from the mouth and nose: the eyes are red and projecting, the eyelids generally open, the tongue wounded by the convulsive motion of the jaws, and frequently thrust out of the mouth. The

shoulders are raised, and ecchymosis is observed upon them, extending upon the breast and down the arms; the fingers are bent, and the hands nearly closed. The body does not appear so much stretched as when it has expired upon a bed. The cartilages composing the larynx are said to be sometimes broken, and the vertebræ of the neck are often fractured or luxated, or their ligament stretched. Urine and fæces are often involuntarily expelled, and semen sometimes emitted. When the principal indications above mentioned are present, we may conclude that the deceased has been hanged whilst alive. It is possible, that a person who is destroyed by another, may be first strangled, and afterwards suspended: if, therefore, two distinct circles formed by a cord, or the deeply impressed marks of fingers on the neck, are perceived on the person found hanging, with appearance of resistance having been made, viz. the clothes torn, the hair dishevelled, &c. we may presume he has been hanged by another; but if these signs are absent, we should conclude that he has destroyed himself.

In the year 1762, John Calas, an unfortu-

nate old man, was broken upon the wheel at Toulouse, on the supposition of having hanged his son: the young man had for some time appeared melancholy, and was found hanging in his father's house: his linen and clothes were not torn; his hair, which had that day been dressed, was *not dishevelled;* nor did there appear on him any marks of violence. The father was a most respectable man and affectionate parent, and the evidence was greatly in his favour; but being a Protestant, and his son having apostatized from the religion of his family, he fell a sacrifice to the unjust suspicion and prejudice of the populace.

The form and situation of the mark made by the rope, should be ascertained: if it is at the bottom of the neck, it has been supposed that the person has been strangled; for, if suspended, the cord would slip to the superior part of the neck.

Infants are sometimes suffocated between feather-beds, or strangled by unnatural parents pressing the trachea with the thumb and finger.

Wounds, effused blood, and marks of violence on the body, are supposed to be unequivocal signs of the deceased having been mur-

dered; but it is possible, that swinging himself off with some violence, with the view of speedily destroying life, the rope may have broken, the body falling to the ground may have been wounded, and the unfortunate person had resolution again to suspend himself. These circumstances, though they rarely occur, should be taken into consideration, when the life and honour of a suspected person are at stake. Circumstantial evidence will elucidate many facts which may be obscure to the medical observer. The rope should be kept, the situation of the body and surrounding objects accurately observed and noted down. As the medical man is generally among the first called in on these occasions, and his evidence being always required, it is proper that this should be done by him.

It has been supposed by writers on this subject, that when the cord is extremely tight round the neck, it is an evidence of assassination, as the weight of the body will not in general be sufficient to pull it very tight: but this, I think, in a great measure depends upon the situation of the noose: if placed at the side of

the neck, it would be pulled tight by the weight of the body; but if at the back of the neck, it would not.

Death by hanging is generally caused by the pressure of the cord on the trachea producing suffocation; though, in some instances, the vertebræ of the neck are dislocated, particularly by the present method of executing criminals in this country. If a trochar be inserted into the trachea of a dog, and the animal be suspended, during the time usually sufficient to destroy life, he will be found to have sustained no material injury.

We have heard of some unsuccessful attempts of this kind, which have been made to preserve the lives of criminals condemned to suffer the punishment of the law: when the neck is not broken, nor the weight of the body very great, it is probable that the experiment would be successful.

On opening the body of a person who has been hanged, the appearances resemble those produced by drowning, with the exception of the absence of water in the bronchial cells. The right side of the heart, and the vessels of

the lungs, are full of blood, and the lungs themselves do not collapse when the chest is opened. The blood-vessels of the brain are distended, and sometimes ruptured; the tongue is generally wounded; and in all cases a bloody mucus issues from the mouth.

DROWNING.

When a body is found in the water, the following questions present themselves:

First, Was the deceased drowned, or killed by other means, and afterwards thrown into the water?

Secondly, If he was drowned, did he destroy himself, or was he forced into the water by another?

These questions may sometimes be determined by examining the body. If there are any severe bruises or excoriations on the hands, knees, or other parts, or if the clothes have been recently torn, we may presume that violence has been inflicted, and these marks occasioned by

struggling to resist it: but it should be taken into consideration, that the person may have precipitated himself into the water, and struck against a stone or other hard substance, or been driven against rocks or stakes by the force of the current, and the body been thus wounded.

The presence of frothy mucus in the mouth and nostrils has, from the days of Ambrose Paré to the present time, been considered a proof of the body having been submersed whilst alive, and is always observed in drowned persons. Water in the stomach is not a proof that the deceased was drowned; it is seldom found there: it is, however, generally discovered in the lungs, though in a small quantity, but probably does not enter till animation is nearly extinguished, as the epiglottis, which closes the passage to the lungs, is endued with such extreme irritability, that it closes on the approach of any extraneous matter. Larrey found water in the bronchiæ of drowned persons, and concludes that it is the cause of death in these cases. When the body is submersed after death, water is never found in the lungs or stomach. De Haen thought that the water flowing into

the lungs is the cause of death, and acts by stopping the passage of the blood in the arteries. To disprove this, animals have been submersed in ink, and other coloured fluids, from which experiments it was found that none entered the lungs during drowning. It has been supposed that those who are drowned die apoplectic. Dr. Cullen says, "Water very often does not enter into the lungs, or even the stomach, in any quantity to do hurt to the system; and in general it is known that, in most cases, no hurt is done to the organization of the vital parts; it is, therefore, probable, that the death which ensues in drowned persons, is owing to the stoppage of respiration, and to the ceasing (in consequence) of the circulation of the blood, whereby the body loses its heat, and with that, the activity of the vital principle*: and this is now the generally received opinion, and is sanctioned by the experiments of Dr. Goodwin, from which he concludes that a small quantity of water *usually* passes into the lungs in drowning, which, mixing with the pulmonary mucus,

* Dr. Cullen's Letter to Lord Cathcart.

occasions the frothy appearance, but is not sufficient to produce the changes which take place in drowning: "and hence it follows that the water produces all the changes which take place in drowning, *indirectly*, by excluding the atmospheric air from the lungs." It was formerly thought that if no water was found in the stomach or bronchial cells, death could not have been occasioned by drowning*.

Water is sometimes found in the stomach of drowned persons, and it is probably taken in at the surface when they open their mouths for breath; and the water which rushes in they are forced to drink, to prevent its falling on the lungs; but when the head is entirely under water, it is not likely that any can enter the stomach; for, when the breath is stopped, and suffocation *commenced*, I believe a person cannot swallow, and it will not fall into the stomach by its own weight†.

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* See the Trial of Spencer Cowper, Esq. for Murder, Hargrave's State Trials, vol. v.

† See the evidence of Sir Hans Sloane, Dr. Garth, and W. Cowper, the anatomist, in the above-mentioned trial.

When the body has been but a very short time in the water, and the speedy application of the proper means fails to restore life, which is not unfrequently the case, it is probable that a larger quantity of water than usual has entered the bronchial cells, and arrested the motion of the lungs.

Blood is often found accumulated in the vessels of the brain, in the jugular veins, the right side of the heart, and in the pulmonary artery; the pulmonary veins, and the left side of the heart being empty; which seems to corroborate the opinion that the true cause of death, by drowning, is the stagnation of the blood, caused by the cessation of respiration.

Even when the body is actually dead, and all hope of resuscitation extinguished, it is sometimes of consequence to ascertain how long it has been in the water—whether in a running stream or stagnant pool—the changes that have taken place by maceration, putrefaction, erosion by fish, &c. It is well known that when dead animal fibre is exposed, for a considerable time, to the action of a current of water, it becomes converted into a fatty substance, resem-

bling spermaceti, called by chemists *adipocire*. The period of time required to effect this change has been the subject of dispute. At the Lent Assises held at Warwick in the year 1805, a cause was tried which is of considerable judicial importance. A gentleman who was insolvent, left his own house with the intention (as was presumed from his recent conduct and conversation) of destroying himself. Five weeks and four days after that period, his body was found floating down a river. The face was disfigured by putrefaction, and the hair separated from the scalp by the slightest pull; but the other parts of the body were firm and white, without any putrefactive appearance. The clothes were unaltered, but the linen was exceedingly rotten. On examining the body, it was found that several parts of it were converted into adipocire.

A commission of bankruptcy having been taken out against the deceased a few days *after* he left home, it became an important question to the interest of his family, to ascertain whether or not he was living at that period. From the changes which the body had sustained, it

was presumed that he had drowned himself the day he left home; and, to corroborate this presumption, the evidence of Dr. Gibbs of Bath was required, who, from his experiments on this subject, is better acquainted with it than any other person *. He stated on the trial, that he had procured a small quantity of this fatty substance by immersing the muscular parts of animals in water for a month, and that it requires five or six weeks to make it in any large quantity. Upon this evidence the jury were of opinion that the deceased was *not alive* at the time the commission was taken out, and the bankruptcy was accordingly superseded.

The appearance of a body that has been drowned is nearly the same as when death has been occasioned by hanging, viz. turgescence of the vessels of the brain and eyes, the tongue often wounded, &c.

Insensibility from submersion in water is to be considered as only a suspension of the vital powers, and there are many instances of their

* See Experiments by Dr. Gibbs on Adipocire in the Philosophical Transactions for 1794, Part II. and for 1795.

esuscitation after the body has been immersed a considerable time. Some, however, who have been only a few minutes under water, cannot be restored even by the immediate application of the proper means. Monsieur d'Egli is said to have reanimated a person who was under water nine hours; there are many incredible stories told on this subject, which I shall not repeat *: the longest period recorded in the Reports of the Humane Society is three quarters of an hour.

Dr. Halley thinks drowning begins in half a minute; this, however, must depend upon the habits of the person. Those who have been accustomed to dive will remain under water much longer than others; and the Indian divers employed in the pearl fisheries in the East Indies are immersed three, four, and in some instances even five minutes, without injury †.

Different methods of restoring suspended

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* See Kite's Essay on the Means of recovering drowned Persons.

† See Percival's History of Ceylon.

animation have been recommended by different writers on the subject.

The body should be carried carefully, with the head a little raised, to the most convenient house, placed in a warm bath, in the sun, or at a proper distance from a fire, and rubbed with hot flannels, flower of mustard, or other stimulants: heated bricks wrapped in a cloth, or bottles filled with hot water, should be applied to the hands and feet. Sinapisms, or a hot-water blister, applied to the region of the heart, would, by the stimulus they occasion, probably be of service*. Pungent salts, pepper, or snuff may be rubbed upon the nose. Breathing should be imitated by blowing air gently into the lungs, by the mouth of another person, or by means of a pair of bellows, if they can be

* To make a hot-water blister, thrust a napkin into a pint cup, so as to fill it, leaving a convex surface, rising a little above the top. Let boiling water be poured on the napkin, till it is thoroughly wetted, then hastily invert it, and hold it about a minute to the part intended to be blistered. I have several times used this when I have wished to produce a speedy blister, and have found it answer the intended purpose.

procured, the nozzle of which should be applied to one of the nostrils, the other nostril and the mouth being closed with the hand; and when the lungs are inflated, the chest should be gently pressed to expel the air: this should be repeated for a considerable time, but discontinued immediately there is any appearance of natural breathing. Oxygen gas, collected in a bladder to which a stop-cock is affixed, and blown into the lungs, has been recommended with every probability of success.

Clysters of warm salt and water, or spirits and water, may be injected; but tobacco, either in form of smoke or infusion, should never be used, as it has a narcotic effect, and tends to destroy the irritability of the muscular fibre.

Bleeding has been recommended by physicians of eminence; but Mr. John Hunter expressly forbids it, and it is now seldom practised.

When the patient can swallow, small quantities of warm wine, or spirits and water, may be taken; but till then, nothing should ever be poured down the throat, either by a flexible catheter or otherwise.

Emetics should never be given.

Slight shocks of electricity, or galvanism, passed through the chest, promise to be of great service.

These means should be persisted in for several hours, and till there are evident signs of death, as stiffness of the limbs, dimness of the eyes, &c.

I need scarcely say, that holding the body up by the heels, violently agitating, or rolling it over a barrel, and other methods sometimes practised by the vulgar, are more likely to destroy life than to restore it.

When animation returns, the patient should not be left alone, as some have been lost from want of care, who might otherwise have been saved.

DANGEROUS INEBRIETY.

A MEDICAL man is sometimes called to a person in a state of excessive intoxication, attended with all the symptoms of apoplexy: it is often difficult to distinguish from which cause they arise, and the only method of making the discovery is by the smell of the breath, and by ascertaining in what manner the patient has spent the few last hours. Many persons die suddenly from drinking large quantities of spirits, which produce stupor, loss of reason, motion, and sensation; the motion of the heart and lungs is enfeebled and interrupted; the pulse is slow, and often irregular; there is a great determination of blood to the head; and the person either dies apoplectic, or from the sedative effect produced on the nerves of the stomach.

A brisk emetic of sulphate of zinc, or copper, in solution, or tartarised antimony, should be immediately given; and, as the power of swallowing is lost, a flexible catheter may be passed into the stomach, and the medicine by that means poured in. The irritability of the stomach

being greatly diminished, the dose should be strong; the liquor in the stomach may be diluted by pouring in vinegar and water, in which any purgative may be dissolved. If these do not act properly, purging clysters may be given. Blood should be taken from the jugular vein, or temporal artery, and the quantity regulated by its effect on the pulse. The head should be washed with cold water, or æther; and the application of blisters to the head and stomach would probably be attended with benefit.

The body should be placed in an easy reclining posture, and all tight bandages removed. If it is cold, it should be rubbed with warm flannels, and the lower extremities put into a warm bath.

When the person is recovering, warm gruel, to which some spice is added, may be taken in small quantities.

CIVIL COURTS.

INSANITY.

INSANITY is such a Proteus-like disorder, and exists in such a variety of forms, that it is difficult to give it a precise definition. It may be called a delusion, or an erroneous association of ideas on particular subjects; and under this general character may be comprehended all degrees of aberration of mind, from melancholy and hypochondriacism, to the most furious mania. The two principal species into which this disease is divided, are mania and melancholia: the first characterized by uncommon excitement; the latter, by great depression. They are frequently changed from the one to the other, by the casual excitement of some passion. To these may be added, Dementia, or Fatuity, which, though not properly called madness, is often the subject of judicial inquiry, and deprives the

unfortunate object of it of the control of his person and property. "From idiocy, madness is readily distinguished. The ideot cannot reason, the madman reasons falsely. The ideot acts from animal appetency; he has no will: the madman wills, but his reason being disturbed by his actions, are not suitable to the usual relations of society *." Fatuity, instead of being an erroneous association of ideas, consists in a want of them, and a total deficiency of intellectual power. The further subdivision of the species into classes, according to the peculiar hallucination under which the mind labours, is useless, and leads to no variety of treatment.

There are some states of the mind which, though they resemble insanity, cannot be properly so called: these are, extreme absence, and abstraction of thought; great peculiarity of actions, or opinions; ungovernable impetuosity of temper, and unreasonable fears and timidity. "Partial affections of the brain may exist," says Dr. Ferriar, "which render the patient liable to imaginary impressions, either of sight

* See an Essay on Madnesss, by Dr. John Johnstone.

or sound, without disordering his judgment or memory: from this peculiar condition of the sensorium, I conceive the best-supported stories of apparitions may be completely accounted for *."

Sir Matthew Hale says, "There is a partial insanity and a total insanity; the former is either in respect to things quoad hoc vel illud insanire. Some persons that have a competent use of reason in respect to some subjects, are yet under a particular dementia in respect to some particular discourses, subjects, or applications, or else it is partial in respect of degrees. And this is the condition of very many, especially melancholy persons, who, for the most part, discover their defect in excessive fears and griefs, and yet are not wholly destitute of the use of reason; and this partial insanity seems not to excuse them in the committing of any offence, in its matter capital; for, doubtless, most persons that are felons of themselves and others, are under a degree of partial insanity when they commit these offences. *It is very*

* Theory of Apparitions.

difficult to define the invisible line that divides perfect and partial insanity, but it must rest upon circumstances duly to be weighed and considered, both by the judge and jury, lest on the one side there be a kind of inhumanity towards the defects of human nature, or, on the other side, too great an indulgence given to great crimes."

Lord Coke says, "Non compos mentis is of four sorts: first, ideota, which from his nativity, by a perpetual infirmity, is non compos mentis: secondly, he that by sickness, grief, or other accident, wholly loses his memory and understanding: thirdly, a lunatic, that hath sometimes his understanding, and sometimes not; aliquando gaudet lucis intervallis; and, therefore, he is called non compos mentis, so long as he hath not understanding."

"Insanity* is to be considered as it annuls a man's dominion over property; as it involves his contracts and other acts, which otherwise would be binding; and as it takes away his responsibility for crimes.

* Erskine's Speech for Hadfield.

"In cases of atrocity, the relation between the disease and the act should be apparent. When the connexion is doubtful, the judgment should certainly be most indulgent, from the great difficulty of diving into the secret sources of a disordered mind; but still, I think, as a doctrine of law, the delusion and the act should be connected."

"I cannot allow the protection of insanity to a man, who only exhibits violent passions, and malignant resentments, acting upon real circumstances, who is impelled to evil from no morbid delusions, but who proceeds upon the ordinary perceptions of the mind: I cannot consider such a man as falling within the protection which the law has given, and is bound to give, to those whom it has pleased God, for mysterious causes, to visit with this most afflicting calamity."

"The attack," says Mr. Haslam, "is almost imperceptible: some months usually elapse before it becomes the subject of particular notice, and fond relatives are frequently deceived by the hope, that it is only an abate-

ment of excessive vicacity conducing to a prudent reserve, and steadiness of character. A degree of apparent thoughtfulness and inactivity precedes, together with a diminution of the ordinary curiosity concerning that which is passing before them; and they, therefore, neglect those objects and pursuits which formerly proved sources of delight and instruction. The sensibility appears to be considerably blunted; they do not bear the same affection towards their parents and relations; they become unfeeling to kindness, and careless of reproof. If they read a book, they are unable to give any account of its contents: sometimes, with steadfast eyes, they will dwell for an hour on one page, and then turn over a number in a few minutes. It is very difficult to persuade them to write, which most readily developes their state of mind *." There are, however, many

* This is the commencement of madness; and for the farther discussion of its gradual advance to decided mania, I refer the reader to page 66 of Mr. Haslam's excellent book on Madness.

instances of decided insanity, where the patient can not only write and read, but converse and argue closely and accurately on every subject, except that on which he is insane. Every body knows when a man is stark-mad: it is my object to describe a man in that state of insanity, when a common observer, or even a person accustomed to insane persons, can with difficulty discover that he is not of sound mind. Learned and respectable physicians have themselves been deceived; and, from being unacquainted with the peculiar hallucination of the patient, have pronounced him sane, when it was well known to those acquainted with the subject of his insanity, that he was a proper object for the restraint of a mad-house.

Even the acuteness of Lord Erskine was insufficient (being unacquainted with his peculiar hallucination) to detect the insanity of a lunatic who fancied himself to be the Christ; and he was indebted for the discovery, to the presence of Dr. Sims*.

There is a madness which shows itself in

* See Erskine's Speeches, vol. iv.

words, and another in actions. A lunatic may be coherent in conversation, but insane in conduct: he may be rational when under the restraint of a mad-house; but when released, and at liberty to act according to the impulse of his hallucination, will show, by his conduct, that he is really insane.

Insanity may generally be discovered by a wildness in the eyes, very high or very low spirits, extravagant or inconsistent conversation or action: the eyes are sometimes fixed, for a long time, on one object, and often on vacuity. These first symptoms usually pass unnoticed by inexperienced observers; and it is frequently difficult to convince them that the patient is insane, unless his conversation is absolutely incoherent, or his conduct dangerous. The body is generally costive, and in the night, which is passed with a feverish restlessness, conversation is often held with some supposed companion, with whom the insane person generally quarrels. These symptoms of deranged mind gradually increase, and are followed by decided mania. The debility of mind which is left, after the subsidence of a violent fever, appears rather to

resemble ideocy than madness, and is generally removed, as the strength of the patient returns. It is very different from delirium, and succeeds it.

Insanity may arise from various causes, as blows or injuries inflicted on the head * or brain; excessive indulgence of the passions of lust, anger, and revenge; intemperance; repelled discharges; fanaticism; intense study; mortified pride, and disappointed ambition. Grief and despair, arising from supposed irretrievable misfortunes, frequently occasion this calamity †.

I believe a frequent cause of madness is suffering the mind to dwell too long on one particular train of thought, whether the subject be real or imaginary. The ideal lucubrations with which many, particularly young persons, allow their minds to be amused, and stray in the regions of fancy, called castle-building, or day-dreaming, I conceive weakens the mind, and,

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* This was the cause of Hadfield's madness.

† The number of insane persons was greatly increased in France by the horrors and misery induced by the revolution.

abstracting it from real and useful objects, absorbs its energies in fanciful and futile speculations, which often lead to insanity.

"It may readily be supposed, that a peculiar structure of the brain disposes to madness; but what that peculiar structure is, has never been demonstrated: it may also be readily presumed, that a peculiar structure of the brain may be generated, as well as of feature and limb*."—"Of all the hereditary diseases, madness is supposed to be the most constant and persevering; for, even if one generation escape, the taint is presumed to cling to the succeeding branches, till, either by admixture with a purer stock, or by education or management, it is neutralized or drained away †."

An insanity or incapacity of mind, which may be the subject of legal investigation, is occasionally induced by bodily diseases. Severe and long-continued epilepsy will so far weaken the mind, as to render a person incapable of right reasoning, and consequently not responsible for his actions. This effect may continue

* Dr. J. Johnstone on Madness. † Ibid.

some hours, or even days, after a severe epileptic attack.

It is a false notion, that madmen cannot reason; they often reason with accuracy on many subjects, and carry into execution plans, which require subtlety and long-continued dissimulation to mature*: nay, there are instances of their having composed regular and elegant

* A lunatic having received, or fancied he had received, an injury from his keeper, at the Lunatic Asylum at Manchester, threatened to be revenged, for which he was punished by confinement: he was afterwards a patient in Bethlem Hospital, and gave Mr. Haslam an account of the transaction, of which the following is an abbreviation: "Not liking this situation, I was induced to play the hypocrite: I pretended extreme sorrow for having threatened him, and, by an affectation of repentance, induced him to release me. For several days I paid him great attention, and lent him every assistance: he seemed much pleased with the flattery, and became very friendly in his behaviour towards me. Going one day into the kitchen, where his wife was busied, I saw a knife (this was too great a temptation to be resisted); I concealed it, and carried it about me. For some time afterwards the same friendly intercourse was maintained between us; but as he was one day unlocking his garden door, I seized the opportunity, and plunged this knife, up to the hilt, in his back."—*Haslam on Insanity.*

poetry on the subject of their own infirmity*; but some are in a miserable state of most abject brutality.

Our mild and beneficent laws deem an insane person not accountable for his actions; but it is difficult to determine what is, and what is not, to be considered insanity—

"Such thin partitions do the bounds divide."

We never so much resemble madmen, as when under the dominion of ungovernable anger; but crimes committed when the mind is actuated by this passion, subject the perpetrator to the punishment of the law.

It is evidently the opinion of Lord Erskine, that Earl Ferrers (though a strong plea of lunacy was urged in his favour) was instigated to the murder by malignant resentments, and merited the punishment he received.

In my own mind I have no doubt that Bellingham, who shot Mr. Percival, was mad; and

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* See "Account of the Retreat near York," by Samuel Tuke, who gives a specimen of poetry, addressed to Melancholy, by a patient, who, "at the time of its composition, laboured under a considerable degree of active mania."

his own account of the transaction warrants that conclusion. I am also of the same opinion respecting Nicholson, who murdered Mr. and Mrs. Bonar at Chiselhurst; for, it appeared that he was neither instigated by the spirit of revenge, nor the hope of plunder. Several similar atrocities which have lately been committed in this country, are of the same complexion; but where no insanity is proved, and there has been none previously existing—where the delinquent has acted from "facts and existing circumstances," I am far from wishing to demand for him the protection which the law gives to insane persons; its improper extension would become a cloak for crimes, which would ultimately tend to the injury of the community, and the subversion of social order.

Partial insanity, which escapes the observation of the patient's family, is sometimes obvious to strangers. The great difficulty which often exists of discovering this species of the disorder, has led to considerable inconsistency of medical opinion. If patients are aware that they are being questioned for the purpose of proving their insanity, they artfully avoid ut-

tering an absurdity, and have imposed upon the most wary; nay, they sometimes even acknowledge themselves to have been deceived as to the existence of their insanity; but the hallucination soon returns *. It is a common opinion, that maniacs do not suffer from cold; and the manner in which they have been kept in Bethlem, with unglazed windows at all seasons of the year, may have given rise to the opinion: it appears, however, to be erroneous, as they are particularly subject to mortification of the feet, and are always to be found as near the fire as they can get, during the winter season. They sometimes abstain from food for several days, without suffering any apparent injury, and frequently will not eat when any person is present,

* Mr. Matthews, a patient lately confined in Bethlem Hospital, though rational on every other subject, "insists that, in some apartment near London Wall, there is a gang of villains, profoundly skilled in pneumatic chemistry, who work upon him by means of an air-loom, an account of which he is persuaded is to be found in Chambers's Dictionary. The assailing gang consists of seven persons—four men and three women." For a further account of this curious case, see Haslam's Illustrations of Madness.

though, if the food be left, they often devour it when alone. Some eat voraciously.

Excessive enthusiasm sometimes partakes of the character of insanity: of this I shall say nothing, as I know not where to draw the line; and if the doctrine is stretched to its utmost limits, who shall escape the imputation of madness on some subject or other?

The prevailing complexion of maniacs is swarthy, with dark or black hair. Out of two hundred and sixty-five, two hundred and five were of this complexion; the remaining sixty were of a fair skin, and light brown, or red-haired.—See Haslam on Insanity.

Maniacs generally sleep but little, and talk much during the night; there is great deficiency of irritability in the stomach and bowels, and large doses of medicine are required to move them *.

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* Mr. Haslam thinks this notion erroneous; I have, however, seen six grains of tartarised antimony, and large doses of the drastic cathartic medicines taken, without producing any effect a pint; of the strongest infusion of senna has sometimes given only one or two evacuations.

A lunatic, though not punishable for criminal offences, is nevertheless compellable in a civil action to give satisfaction for damages. Though he labours under many legal disabilities, he is allowed to act in some things by his committee, and even to sue for a divorce from his wife, by reason of adultery*.

Melancholia is characterized by inactivity of body and mind, inability to attend to the ordinary occupations of life, silence, and a countenance full of anxiety and despair. A person may have perfect possession of reason on every subject, whilst labouring under a considerable degree of melancholy, and suffering from extreme dejection of spirits, for which he can assign no cause.

A melancholic person may make a will, if it can be proved that he has a " disposing memory, so as to be able to make a disposition of his estate with understanding and reason;" but ideots or insane persons are incapable of devising property.

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* See Courier Newspaper, Jan. 26, 1814, Consistory Court, Doctors' Commons, in the case of Parnel (by his committee) against Parnel.

The range of the human understanding being on a large and comprehensive scale, it is proper to determine what latitude is given to the term ideot. The law defines an "ideot or natural fool to be one who has so little sense, as to be unable to number to twenty, or to tell his age, or to answer any common questions, by which means it may plainly appear that he has not reason to discern what is to his advantage or disadvantage *." "But a man is not an ideot, who has any glimmering of reason, so that he can tell his age, know his parents, or such-like common matters †."

Ideotism is most frequently congenital, but sometimes accidental, and may arise from diseased organization of the brain, intense study, intemperance, excessive evacuations, the action of depressing passions, epilepsy, fevers, and other causes occasioning debility. Mania often degenerates into fatuity. The disease arising from some of the above-mentioned causes is sometimes only temporary and curable; but con-

* Burn's Eccles. Law.

† Fitzh. N. Brev. 232.

genital ideotism is beyond the power of medicine, and that consequent to epilepsy is very seldom cured.

A species of fatuity is often the consequence of paralytic affections; and mania occasionally arises from the same cause. Ideots have a defective memory, an inarticulate speech, a peculiar expression of countenance, and a drivelling of saliva from the mouth; which latter symptom arises, probably, not from any inordinate secretion of that fluid, but from carelessness in not swallowing it.

When cases of insanity come before courts of justice, the medical practitioner is generally asked:

1. Whether there is a probable chance of recovery?

2. Whether there has been any lucid interval, and of what duration?

3. Whether the symptoms are sufficiently mild, to suffer the patient, with propriety, to retain his liberty and possession of his property?

4. Whether, in cases of convalescence, the cure is likely to be permanent?

To determine the probability of recovery,

we must take into consideration the nature of the malady; whether it be melancholy, fatuity, or furious madness; its cause and duration, the frequency of its attack, the sex and age of the patient.

"Patients who are in a furious state, recover in a larger proportion, than those who are depressed and melancholy*." The alternation of the disease from mania to melancholy, and vice versâ, is considered as unfavourable.

Hereditary madness, and that occasioned by fanaticism, is not so soon nor so frequently cured, as that diseased state of the mind which is induced by real misfortunes and difficulties in life, or by debilitating causes.

The protracted duration and frequent recurrence of the disease, diminish the probability of cure; when it has continued upwards of a year, patients at public asylums are put upon the incurable establishment.

Where there is in women an hereditary dis-

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* "Of one hundred violent cases, sixty-two were discharged well: of the same number of melancholic cases, only twenty-seven."—Haslam.

position to madness, it is frequently called into action immediately after parturition. In these cases, the prognosis is always favourable. "In our climate, women are more frequently affected with insanity than men: from whatever cause it may arise, it is considered very unfavourable to recovery, if they should be worse at the period of menstruation, or have their catamenia in very small or immoderate quantities *."

Females recover in larger proportion than males, and their disease is often called into action by peculiarities of their constitution: but when it arises, in either sex, from exciting causes whether moral or physical, unconnected with the peculiarities of sex, the proportion of cures will, probably, be found to be nearly the same.

"Insane persons recover in proportion to their youth †;" but it was the opinion of the late Dr. Willis, that age was of no signification,

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* Haslam.

† See a table of ages, and proportionate number of cures, in Haslam's excellent Observations on Madness, page 249.

unless the patient had been afflicted before with the same malady. Children, and very old persons, are seldom mad; the disease most commonly occurs between the ages of thirty and forty, at which period of life we are most exposed to its exciting causes.

A medical man is always asked, whether or not a patient has lucid intervals. By this term is to be understood, not a *remission* of the complaint, but a temporary and total cessation of it, and complete restoration to the perfect enjoyment of reason on every subject. This is a question not very easy to answer, and requires attentive observation and long and repeated examination to determine, by a person acquainted with the subject of the patient's insanity. The occurrence of these intervals of reason is deemed favourable, particularly when they supervene to a night of sound sleep.

It is often difficult to pronounce a convalescent perfectly restored to reason, and fit to be returned to society. It is necessary that he should be able to converse on all subjects rationally; to bear the presence or recital of the exciting causes of his disease, and receive with-

out emotion, the visits of his family and friends. The disease, however, sometimes recurs with all its violence, soon after returning home; and some maniacs, though furious in their own houses, become quiet and tractable when removed.

It is not always necessary to restrain insane persons, or to deprive them of the management of their property. Some who are insane on one subject only, are peaceable, and competent to the proper conduct of their affairs; and instances are not wanting of their having been intrusted in the exercise of their profession: but this state seldom lasts long, and watchful attention to their actions is always necessary. When the disease has so far advanced, as to be properly called madness, control becomes necessary, and the maniac should be removed from his own house, and those objects to which he has been accustomed.

Confinement, strictly speaking, is never proper, except the conduct of the maniac is furious, or threatens danger to himself or others; though he should not be allowed to go abroad

without being accompanied by a proper attendant.

Dissection has thrown but little light on the cause of insanity; the brain, which always has been supposed to be the seat of this disorder, has seldom evinced those morbid appearances which we should have deemed requisite for the production of such fatal effects. The skull has sometimes been found thicker, sometimes thinner than usual. The membranes of the brain are occasionally thickened and inflamed, and the vessels distended with blood.

Effusion of coagulable lymph on the surface of the brain, or extravasation of serum in the ventricles, is generally observed. An appearance of air in the vessels of the pia mater has been noticed in several of the dissections recorded by Mr. Haslam *. The medullary substance of the brain, when cut into, seems to contain more blood than usual; a gritty matter consisting of phosphate of lime, has been found in the pineal gland. The brain is sometimes

* In the only two dissections of insane persons I have witnessed, the same appearance was observed.

softer, sometimes harder than usual, possessing a certain degree of firmness and elasticity. The most general appearance which has been observed is a considerable determination of blood to the head, and serous effusion.

In the cure of mania, the remedies should be adapted to the constitution of the patient, the state of the body, and the symptoms and character of the disease.

In plethoric habits, bleeding immediately from the head has been employed with great advantage, both in maniacal and melancholic cases.

Purging is very beneficial, and will sometimes, in the early stages, divert slight attacks of the disease: it in all cases forms an essential part of the plan of cure.

Emetics in the hands of some practitioners have been very serviceable; but the general opinion of medical men is not in their favour. The result of their employment in Bethlem and St. Luke's Hospitals, and in several private establishments, does not justify their frequent or indiscriminate use; they, however, often produce a temporary calm.

Camphor has been employed with advantage in many cases. Dr. Ferriar and Dr. Cox have spoken highly of the benefit they have derived from the employment of large doses of digitalis. Hyoscyamus, hemlock, and other narcotics, have been recommended, but I cannot find much testimony in their favour. Opium has not been productive of permanent benefit. Blisters to the head and neck are occasionally serviceable, but are sometimes supposed to be injurious, from the irritation they occasion; their application to the inside of the legs has often mitigated the violence of the disorder *. Warm bathing is likely to be of great service in this disease; but the cold bath has not afforded any decisive advantage, and is, in some cases, supposed to have caused paralytic affections, which in a short time have supervened on its administration; but I have frequently seen benefit result from washing the head with cold water. The rotatory swing has been suggested by Dr. Cox, as a means of curing maniacal affections, and (notwithstanding the ridi-

* Haslam on Madness.

cule with which some writers have treated the proposal) has in many cases contributed in a great degree to allay the violence of furious paroxysms.

Respecting the curative means to be employed in this most dreadful of all human calamities, but little has hitherto been attempted. It is to be lamented, that, in general, madhouses have been considered as prisons (some of them, unhappily, worse than prisons) for the safe custody of patients, rather than as hospitals for the treatment of their maniacal disorder. It is the opinion of some, that more is to be expected from the judicious management of lunatics, than from medicine. But as a diseased state of mind often proceeds from corporal irritation, we may, I think, expect much from the proper and *well-timed* administration of medicine, aided by exercise, employment, suitable occupation, and amusement of the mind, removing at the same time all causes of mental and corporeal excitement. In cases of dangerous and furious mania, close confinement, and sometimes coercion, by means proportioned to the

violence of the complaint is proper and necessary, but in no others.

Of corporal chastisement I shall say nothing, as I trust the whip is banished from every madhouse in the kingdom. A keeper should on no account be allowed to strike an insane person, or to keep him in restraint longer than is absolutely necessary. There are other more mild and effectual means of punishment, which may be employed when the patient has reason enough to be sensible of their application: when he has not, all chastisement is wanton and unnecessary cruelty, and is better calculated to destroy reason than to restore it.

It is to be hoped, that, in consequence of the late judicial investigation into the state of madhouses in England, their unfortunate tenants will henceforth be treated with greater humanity, and though unhappily deprived of reason, the noblest attribute of man, by the fiat of their Maker, not be degraded below the state of beasts, by the inhuman barbarity of their fellow-creatures.

Fatuity, as I have before mentioned, is seldom curable; when it arises from debilitating causes, exercise, sea-bathing, bark, change of air, and nutritious aliment, are the remedies to be employed for its removal.

PRETENDED DISEASES.

Diseases are frequently feigned for the purpose of exciting commiseration, or escaping punishment or military duty.

Insanity was feigned by David, Ulysses, and Lucius Brutus, and has been by others in later times. It may, however, generally be soon detected, as it is difficult, for any length of time, to imitate the manner of a lunatic, and to bear the privation of sleep. An insane person generally sleeps little, and talks much during the night; but a pretender, if he thinks he is not watched, will sleep, and only act his part when he believes his conduct to be observed. There is, moreover, a peculiarity of manner and countenance, belonging to an insane person, which is well known, and not easily counterfeited: it is more common that madmen pretend to be well, than that sane persons feign madness.

Epilepsy is frequently pretended by beggars, to gain admission into, and enjoy the comforts of hospitals, or to excite the commiseration

of bystanders. This disease has been sometimes so well imitated, as to deceive medical men; it may, however, be detected by observing the pupils of the eyes, which are dilated during a fit of real epilepsy, and do not contract on the application of light; nor is the patient affected by rubbing volatile alkali, or other ordinary stimulants, on the nose. The tongue is generally bitten, and the mouth bloody during the attack: the blood may be sucked from the gums; but few pretenders will be hardy enough to bite their tongue severely.

Hysteria being attended with such a variety of symptoms, and appearing in such various shapes, is easily imitated. Dr. Cullen is said to have been deceived by a man, who, pretending to have this disease, was retained as long as suited his convenience in the Edinburgh Infirmary, and afterwards triumphantly acknowledged the deceit. When we have sufficient reason to suppose these diseases to be imitated, keeping the person on low diet, separate from the society of the hospital, and threatening, on the next appearance of the fit, the application of the actual cautery, are the most likely means

to discover the fraud. Some pretend that they have no pulsation at the wrist, which deception is occasioned by tying tight ligatures round the arms; others, that they can suspend the action of the heart: that this may be done by some persons, is very probable. Dr. Cleghorn, of Glasgow, mentions in his Lectures, the case of a person, whom he knew, who could feign death, and had so completely the power of suspending, or, at least, moderating the action of the heart, that its pulsation could not be felt: this man, some years afterwards, died suddenly*.

Ulcers of the legs, of an incurable nature, are often feigned by beggars, and by soldiers, to procure their discharge. These are made by the application of a common blister, or one made of the leaves of the ranunculus, and the wounds kept open and deep, by applying copperas: if this cannot be easily procured, they bind a piece of copper coin on the sore. Military surgeons

* There are on record instances, where the pulse ceased in either radial artery as long as the person rested on a full inspiration; and others, where the pulse in those arteries was lost for more than a fortnight.—PARRY's Elements of Physiology.

should be cautious how they give certificates to soldiers wishing to obtain their discharge from a regiment, on account of incapacity to serve from this cause, and should, for a time, shut them up in a ward in the hospital, where they cannot procure copper coin, or buttons, or other means of keeping open the sore: if the wounds have been kept open by such methods, they will very soon heal under proper treatment.

Long fasting, or the power of refraining altogether from food for years, has been frequently the subject of imposition. The recent case of Anne Moore, of Tutbury, is a remarkable instance*.

Vomiting of urine, and making bloody urine, have sometimes been pretended: this last is done in India, and its appearance caused by eating the Indian fig *(cactus opuntia)*, or the fruit of the prickly pear, which renders the urine of a bloody colour.

Dropsy is frequently pretended by women with child, either from ignorance of their real si-

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* See the trial of an impostor, for a similar offence, in the State Trials, vol. v. p. 482.

tuation, or to conceal for a time their shame, or to procure the convenience afforded by an hospital. When pregnant women are unknowingly admitted, their case may be discovered by examination, which, when there is any doubt, should be insisted upon. Pregnancy is frequently pleaded, for the purpose of delaying the execution of the law.

Blindness is sometimes counterfeited: if the pupil does not contract, there is no doubt that the disease exists; but if it does, we may suspect its reality, though, in some cases of amaurosis, the pupils are sensible to the stimulus of light. By reflecting the rays of the sun upon the eye, by means of a mirror, the deception will be immediately discovered.

Deafness and dumbness, fever, lameness, and contraction of the limbs, and many other diseases, have been feigned, which may generally be detected by the absence of their leading characteristics. Some complaints, particularly those of the spasmodic class, vary in different people so much, as to induce a suspicion of their being pretended. Lord Monboddo, in his Ancient Metaphysics, mentions an extraordinary

case, of what he calls jumping ague, in which the person affected, would jump on chairs and tables, and run with great velocity, during sleep.

Gravel and stone are sometimes pretended to be voided: this imposition may be detected by a chemical analysis of the calculus.

The skin has been stained to imitate jaundice; but the clearness of the eyes (which are always yellow in that disease), and the colour of the evacuations, will easily detect the imposture.

Hernia is said to have been feigned, by blowing air into the cellular membrane; and the pretended vomiting of pins, frogs, beetles, and other animals, has sometimes deceived the credulous and unwary.

IMPUTED DISEASES.

Diseases are sometimes imputed to procure divorce or separation, to obtain possession of the property of another, or to prevent marriage. These diseases are impotence, lues venerea, fits, insanity, or imbecility of mind, and dotage.

Women have been accused, by an enemy, of having been pregnant, for the purpose of destroying their characters, and preventing marriage. The just foundation of these charges may generally be ascertained by examination; and for the means of discovery, as far as it can be effected, I refer to the heads under which these subjects have been separately treated. It is shocking to think, and has probably been little suspected, to what an extent imputed insanity may have been carried, either where it has not existed, or only in so slight a degree, as not to warrant confinement; or how much it has been exaggerated, and its cure retarded, by the inhumanity of relatives.

"I knew an instance," says Mr. Bakewell, "of a person of very respectable family, who became insane soon after giving birth to a son. Such cases are generally supposed easy of recovery, from particular circumstances; that it is merely a temporary irritation. She was packed up into a back garret, where she was coarsely fed and coarsely clothed, while her husband enjoyed every luxury that money could purchase,

in the house below, till that son became of age, and had her released. I know another family, who have kept a brother for seven years in confinement, without any means of recovery, FOR THE SAKE, AS I FULLY BELIEVE, OF HIS PROPERTY, though they are all in opulent circumstances.

"I have known a son very evidently taking measures to prevent the recovery of his father; and I have known several instances of people of opulence taking measures to prevent the recovery of their own brothers.

"I have seen evident proofs of vexation and disappointment in a wife, on the unexpected recovery of her husband; the same in a husband, on the unexpected recovery of his wife; and in a mother, on the unexpected recovery of a son. I have now in the house a woman, who has been confined in a dark garret, without the comforts of a fire, for the best part of twenty years: her husband confessed to me that he had not seen her for many years. The servant told me that nobody saw her but herself; and she only to take her food, and take away the necessaries. The woman was perfectly inoffensive.

He himself was trading at the rate of a thousand pounds a week, by his own confession. Upon his bankruptcy he was obliged to provide some means of treatment for her, and he desired me to take her. I have found her very susceptible of good treatment: she seems to take a delight in looking at my children, and the comforts of a good fire; and has some little exercise, occasionally walking out in the open air*."

Such infamous abuses cry loudly for legislative interference, and we may hope will, for the future, be prevented.

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* See Examination before the Committee of the House of Commons, appointed for the better regulation of madhouses in England.

APPARENT DEATH.

As hysteria, excessive cold, lethargy, catalepsy, trances, and the various causes which produce asphyxia, may destroy all appearance of vitality, without extinguishing animation itself, it behoves those concerned, to take care that, in cases of suspension of the vital functions, and where persons apparently die suddenly, the body be not too early committed to the grave, as there is reason to believe that some have been buried before the extinction of life; and many such cases have been recorded. Various means have been devised of discovering whether or not the vital spark be really extinct, as placing a basin of water on the chest, and observing its motion, holding a mirror before the mouth, &c.; but the true signs by which death is manifested, are coldness and rigidity of the body, sinking of the eye, dimness and flaccidity of the cornea, lividness of the back, depression and flatness of the loins, the open state of the

anus, and the peculiar cadaverous odour *; but, in cases of death by prussic or zootic acid (which has lately been announced as a new poison, and an instance mentioned by Professor Hufeland, of a thief who destroyed himself with it), the cornea does not collapse, but retains, for a considerable time, its fulness and lustre; and when death is the consequence of exposure to carbonic acid gas, the body retains its heat longer than when it has been occasioned by any other means.

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* Blumenbach's Institutes of Physiology.

ECCLESIASTICAL COURTS.

To ecclesiastical courts are referred questions relating to marriage. This contract may be dissolved by a variety of causes, respecting some of which, the opinions of medical men are occasionally required: among these is *impotence*, in either sex.

Impotence in males may be temporary, or permanent and incurable; it is occasioned by external and internal causes. The external are tumors, or other unnatural enlargements of the penis; its deficiency, either from natural or accidental causes; its total absence, or partial destruction, which latter are not unfrequently occasioned by venereal affections. Obliteration of the canal of the urethra (which, instead of opening into the glans penis, opens into the perineum, or at the middle of the penis), though not, strictly speaking, a cause of impotence, occasions sterility. The deprivation of both

the testicles, or cancerous affection of them, occasions impotency; but one alone, in a sound state, is sufficient for generation. The testicles sometimes remain in the abdomen very late, and, by a sudden and violent exertion, are thrust into the scrotum; there are instances of their having continued in the abdomen during life, in which cases Mr. John Hunter thought (and Zacchius and Riolan were of the same opinion), that sterility would be the consequence; but there is sufficient evidence to prove the contrary; and it is now generally believed that it is accompanied by neither impotence nor sterility. There are instances of persons having more than two testicles: four, or even five, are said to have been seen *. Pope Sixtus the Fifth declared he would divorce all eunuchs; and the parliament of Paris, in 1665, decreed that the matrimonial contract should not be deemed va-

* "Nous avons vu en France trois frères de la plus grande naissance, dont l'un possidoit trois testicules, l'autre n'en avoit qu'un seul, et le troisième n'en avoit point d'apparens: ce dernier étoit le plus vigoureux des trois."—Vide Voltaire and Bertholin quoted by Mahon.

lid, unless two testicles were evident. Eunuchs are generally without passions or energy.

M. Larrey, Inspector-general of the French army, says, that many of the troops, on their return from Egypt, were affected with a disease, which he calls atrophy of the testicles; they became soft, and gradually diminished, without pain, or the existence of any venereal symptoms. When they are both so affected, the generative faculty, and the natural sexual desires, entirely cease. Park-keepers, who have the management of deer, annul the power of generating in bucks, by squeezing the testicles forcibly, and thus destroying their organization and secerning faculty.

The internal causes of impotence are paralysis, affecting the muscles of the penis, affections of the mind *, general debility of the body, either from accidental disease or habitual excess. To invalidate marriage, however, it is necessary that the disease should be absolutely incurable. Malformation of the organs seldom admits of a remedy. Mr. Hunter was con-

* See Cullen's Synopsis Dyspermatismus.

sulted by a person, whose urethra opened into the perineum; being desirous of having children, he recommended him to inject, by means of a syringe, the semen into the vagina, *post coitum*, and during the existence of the orgasmus venereus; which plan was supposed to cause impregnation. When the complaint arises from relaxation, general debility, mental affliction, &c. it is often curable by tonic and stimulating medicines, cold bathing, and nutritious diet; but where it is occasioned by paralysis of the muscles of the penis, the prognosis is not favourable. The imagination is sometimes the cause of temporary impotence, with regard to certain females; for some curious instances of which, I refer my readers to Mr. John Hunter on the Venereal Disease, chap. xii.; and Montaigne's Essays, chap. xx. on the Imagination. The marriage contract is not dissolved, *ab initio*, by impotency, but by sentence of separation during the lives of the parties.

A certain degree of impotence, occasioned by early and excessive debauchery, and by secret pollution, is, I believe, more common than is generally imagined. When it exists, the se-

cret is of course confided only to a medical friend. It is accompanied by an involuntary discharge of semen, which occasions great debility, and difficulty, or impossibility, of exciting the turgescence of the penis. I have seen three cases of this kind: one of them was occasioned by a species of satyrismus, the cause of which I could not discover.

Impotence in women may arise from adhesion of the labia, or closure of the vagina, in consequence of inflammation; it is sometimes contracted from original formation, sometimes from disease. Scirrhous hardness, or polypi in the vagina, prolapsus uteri or vaginæ, faults in the menstruation, extensive enlargement of the nymphæ or clitoris, or unnatural density of the hymen, may be causes of impotency. Ambrose Paré mentions the case of a young woman, whose hymen was as strong as parchment, which he was obliged to cut with the scissars, before coition could be effected. The late Dr. Clarke used to relate a similar case in his Lectures. The remedy, however, is easy, viz. incision. Most of these causes of impotence admit of cure; but cancer in the uterus or vagina, fistulous communications

with the bladder and rectum, scirrhus or dropsy of the ovaria, are incurable.

Stricture of the cavity of the uterus *, deficiency of the ovaria, closure of the os uteri, or the Fallopian tubes, will occasion sterility, but can be discovered only after death. The uterus has sometimes been altogether wanting; this can only be ascertained by examination. Sterility, however, often exists where there is no reason to suspect disease or unnatural formation, and depends upon causes which our most minute investigation is not able to discover.

The theory of generation is a subject that has long claimed the attention, and engaged the labour, of philosophers, though unsuccessfully; as it is still but very imperfectly understood.

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* See Baillie's Morbid Anatomy.

HERMAPHRODITES.

By this term is meant, an animal, combining in its own person both the male and female parts of generation, and capable of begetting or conceiving. It is now admitted, that no such being of the human species ever existed, though it was formerly conceived possible, as by an old French law it was enacted, that they should choose one sex only, and keep to it. It is believed, that some animals, as worms, snails, leeches, and, perhaps, all those that have no bones, are true hermaphrodites. A *lusus naturæ* giving the appearance of a combination of the sexes, is frequent in inferior animals, particularly in sheep; it is sometimes seen in horses; and horned cattle so formed, are called fremartins: it is not very uncommon in the human species; but since the fabled union of Salmacis and Hermaphroditus, no individual human being is believed to be really capable of exercising both organs of generation.

Hermaphrodites are of two kinds:

1st, The male having a rima in the perineum, resembling the vulva of the female.

2d, The female having a large clitoris, resembling the penis.

The extraordinary appearance of the first case may arise from shortness or deficiency of the penis, the urethra opening at the glans or into the rima, which is not deep, and closed at the bottom. The rima is between the testes, which give the appearance of labia: in these cases the mammæ and uterus are wanting.

The appearance of the second or female hermaphrodite, is caused by an enlargement of the clitoris, a disease by no means uncommon in hot climates, which has given rise to the custom of female circumcision, sometimes practised in Asia and Africa*: it resembles the penis in size only, but not in structure, and the testes and beard are wanting.

A person of this description, more nearly resembling the true hermaphrodite, is now exhibited in Paris, having the beard and large hairy limbs of a man, the clitoris resembling the penis, and the urethra terminating in its glans, with the breasts and passions of a

* See Niebuhr's Travels.

woman; for a minute description of whom, given by the commission appointed by the *Faculté de Médecine* of Paris, I refer the reader to the 23d number of the London Medical Repository. Ambrose Paré mentions a case, where, by violent exertion, the male organs of generation became suddenly developed, and the person who had been before considered to be a woman, was admitted to the rights of manhood *. For similar instances, consult Montaigne's Essays, chap. xx. and Pliny, who says, he himself knew a case of this kind. Many cases are recorded, where, from the imperfect developement or defective formation of some of the parts of generation, and from the apparent admixture of others, it is difficult to determine to which sex the unfortunate person belongs, particularly during infancy; but as by matured age they are evolved, the characteristics of the sex commonly become evident. In persons thus formed, the passions are seldom

* A similar case, which happened at Thoulouse, is recorded by M. Veay in the sixteenth volume of the Philosophical Transactions.

very strong, and they are generally unable to perform the functions of either sex.

Some subjects, usually treated of in works of this kind, as unnatural offences, &c. I have wholly omitted, because it does not appear that medical evidence can often be deemed necessary in courts of justice to prove their perpetration; and, should it be required, the injury which would probably be inflicted, must immediately suggest itself to the mind of every practitioner.

Medical police is a distinct subject, though, as it regards the health and well-being of society, it is a very important one, on which I shall probably, at a future time, offer some observations.

THE END.

S. Gosnell, Printer, Little Queen Street, London.

ERRATA.

Page 12, line 16, *for* aneurismus, *read*, aneurisms.
25, DISSECTION is printed out of its place, and should succeed line 9, of page 24.
110, line 9, *for* anascarca, *read*, anasarca.
127, line 9, *for* Edward the Third, *read*, Edward the First.
145, line 1, *for* esuscitation, *read*, resuscitation.
165, in the note, place the semicolon before *a pint*, instead of after it.